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MEMORANDUM

To: Town of Amherst

From: Liza Cohen and Jason Schrieber, Nelson\Nygaard

Date: November 14, 2016

Subject: **Downtown Parking Study Summary**

The following provides a brief summary of key findings, found in more detail in our 9/22/16 Tech Memo addressing Downtown Parking Supply and Demand.

- Within a ten-minute walk (or a quarter mile radius) of the intersection of Pleasant Street and Amity Street, there are approximately **3,400 parking spaces.** Nearly two thirds are privately owned.
- The study area has about **1,500 unoccupied spaces (nearly half)** at the busiest time of the week – around 1 pm on a weekday. This is the same on a Saturday.
- Despite the changes in the downtown context and parking regulations, **the parking peak is essentially unchanged over the last 8 years:** In 2008, there were 705 vacant spaces in the study area at the midday peak while in 2016, 706 spaces were vacant at the midday peak.
- The study area has nearly 400 more parking spaces overall than would be recommended by a traditional demand model that assumes every use needs its own dedicated parking.
- The shared parking demand model and actual observed data both show that the study area **actually has a surplus of 1,200 spaces** at peak demand.
- Both an expected development scenario *and* a maximum development scenario developed in consultation with Town staff, show that future parking demand – can be accommodated within existing facilities.
- A parking user-survey was conducted and found the following:
  - Many people find parking close to their final destination, but it is more common among employees than customers
  - While a majority of respondents have at some point failed to find parking and left, most have only experienced this rarely or several times a year
  - The most important factors in selecting a parking space were the ease of finding a parking space and proximity to a final destination
- Conversations with business owners, town staff and residents found the following:
  - The public parking lot next to the free CVS lot on North Prospect Street is underutilized
  - Visitors do not find the parking system easy to navigate
  - The parking system has not adapted to the growth in the restaurant business

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- Unlike residents who don't perceive a problem, business owners remain concerned about inadequate parking for patrons – particularly compared to other businesses with more plentiful supply
- Tickets are seen as cheap compared to permits – a potential problem for enforcement
- The garage suffers from a perception of feeling unsafe

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Subject: Task Order Amendment 1 – Task 1: Downtown Parking Supply & Demand

Introduction

Nelson\Nygaard recently conducted a review of existing parking supply and demand in downtown Amherst. This effort includes a detailed parking inventory as well as parking utilization counts of public and private parking in the study area. The assessment reviews current parking supply and utilization, and compares observed parking conditions to expected parking demand based on adjacent land uses, including future land development scenarios. In addition, online surveys and stakeholder interviews were conducted to inform the assessment.

Existing Conditions Summary

- Within a ten-minute walk (or quarter mile radius) of the intersection of Pleasant Street and Amity Street, there are approximately **3,400 parking spaces.** This includes all public and private parking (excluding small residential driveways of less than 5 spaces), which includes both on and off-street resources.
  - Of these spaces, nearly two-thirds (~2,400) are privately-owned or otherwise restricted to only some users.
  - Twelve percent (~400) of spaces are on-street permit-parking-only spaces during weekdays, but become public parking in the evenings and on weekends, which increases the accessible supply of public parking.
- The study area has about **1,500 unoccupied spaces (nearly half)** at the busiest time of the week.
  - The peak accumulation occurs midday at around 1 p.m.
  - Not all unoccupied spaces are currently accessible by the general public.
  - On a typical weekday (Thursday) there are more than 1,500 empty spaces throughout all hours of the day.
  - On a typical weekend day (Saturday), there are also more than 1,500 empty spaces throughout the day.
  - Of all ~1,000 publicly-accessible spaces (including on- and off-street), about 450 spaces are empty at the busiest time on a weekday.
  - Of all ~400 on-street permit-parking-only spaces, about 175 are unused at the busiest times on a weekday.

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Study Area

Downtown Amherst is a vibrant and historic town center with a mix of land uses, multiple transportation options, and a walkable environment. The Town's amenities, including excellent schools, shopping, and restaurants, make downtown Amherst the anchor of a desirable place to live, work, and visit. Amherst's success necessitates a balance between mobility needs and parking pressures among customers and visitors, employees and employers, residents and students.

Figure 1 Study Area (with Core Parking area highlighted)

Reflecting this mixed-use walkable environment, the study area for this analysis reflects all parking accessible within about a ten-minute walk of the Amity Street and Pleasant Street intersection, with the exception of the core Amherst College campus. Shown in Figure 1, this area includes most major downtown parking generators, including Town Hall, housing, offices, shops, restaurants, bars, and other entertainment venues.

Downtown Parking Inventory

Key Findings

- There are 3,378 total parking spaces in the entire study area, with 2,395 off-street spaces and 983 on-street spaces
- Parking regulations vary by day. On **weekdays:**
  - 58% (1,998) of spaces are privately-owned or otherwise restricted to only certain users
  - 30% (996) of spaces are accessible for the general public to use
  - 12% (394) of spaces are in permit-parking-only spots (mostly on-street)
- On **weekends**, all permit-parking-only spaces become available to the public. This boosts public supply by over one-third:
  - 59% (1,988) of spaces are privately-owned or otherwise restricted to only certain users
  - 41% (1,390) of spaces are accessible for the general public to use

Parking Supply

The Town of Amherst has a varied and robust parking supply. Within the study area there are over 3,000 parking spaces for both public and private use. As shown in Figure 2, off-street parking makes up a majority of parking in Downtown Amherst. There are three general parking categories in Amherst:

- **Public:** Parking that is open to any member of the public, sometimes for a fee
- **Restricted**: Parking that is restricted to certain user groups, such as "customer only" parking or a residential parking lot
- **Permit:** Parking that is open to members of the public who have purchased a permit

Figure 2 Parking Inventory Summary

Parking Type	# of Spaces	% of Total
Off Street	2,395	71%
On Street	983	29%
TOTAL	**3,378**	**100%**
Regulation	**# of Spaces**	**% of Total**
Weekday		
Publicly Accessible (on- & off-street)	996	30%
Private/Restricted	1,988	58%
Permit (mostly on-street)	394	12%
Weekend		
Publicly Accessible (on- & off-street)	1,390	41%
Private/Restricted	1,988	59%
TOTAL	**3,378**	**100%**

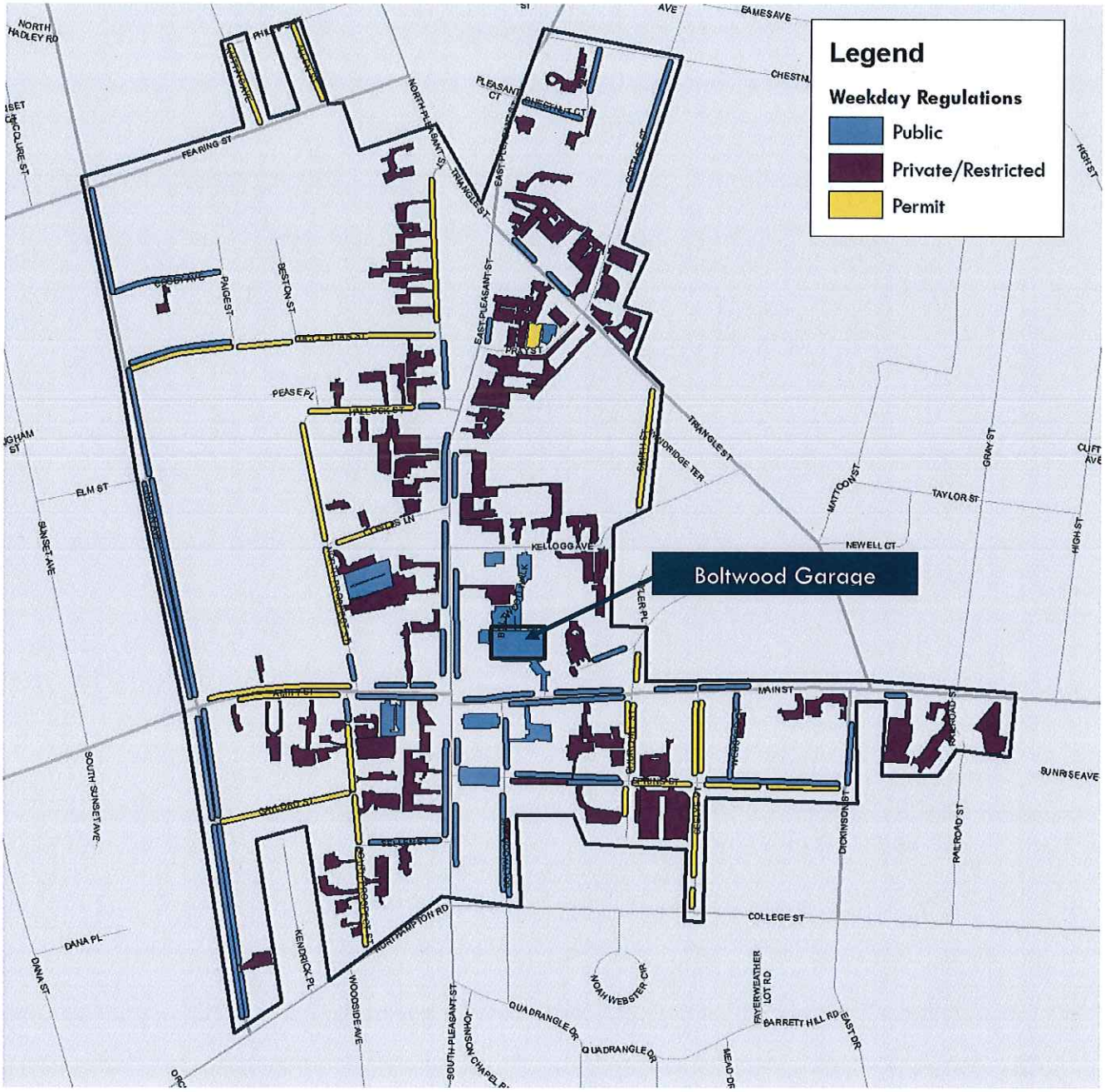
Most of the off-street parking is restricted, while most on-street parking is public—though a substantial portion of it is permit-parking-only, depending on the day of the week. Figure 3 provides a detailed inventory with regulations.

Figure 3 Detailed Parking Inventory with Regulations

Off-Street Parking Facilities		On-Street Parking Facilities	
Regulation	**Space Count**	**Regulation**	**Space Count**
Amherst College	177	ADA Parking	2
Church	52	Lord Jeffrey Permit	18
Commercial	486	Metered - 2 Hr	184
Depot	37	Metered - 3 Hr	21
Garage - 4 Hours	80	Metered - 5 Hr	50
Hotel	8	Metered - 9 Hr	12
Library	13	No Parking	0
Lord Jeffrey	20	No Parking M-F 8-3	18
Med/Dent/Vet/Office	151	No Parking M-F 8-5	20
Metered - 2 Hours	196	Resident Only Permit Area 1	30
Metered - 3 Hours	31	Resident Only Permit Area 2	25
Metered - 4 Hours	18	Town Center Permit	323
Metered - 8 Hours	70	Unregulated	280
Metered - No Limit	12	**Total On-Street**	**983**
Municipal	54		
Post Office	18		
Private	361		
Residential	547		
Town Center Permit	20		
Under Construction	44		
Total Off-Street	**2,395**		
GRAND TOTAL		**3,378**	

The availability of parking changes weekday to weekend. Figure 4 shows the inventory of parking in Downtown Amherst categorized by whether the spaces are public, restricted, or permit parking on weekdays only. Twelve-percent (~400) of total parking spaces in Downtown Amherst are permit parking on weekdays. These spaces become public spaces on weekends when permit regulations are not in effect. This increases the supply of public spaces from 30% (~1,000) of total spaces on weekdays to 41% (~1,400) of total spaces on weekends. Both sets of public spaces are mostly situated close to the core of downtown.

Figure 4 Summary Parking Inventory and Regulations



Parking Utilization

Parking utilization is a measure of how parking spaces are used within a particular timeframe. Counts are conducted on "typical" weekdays and are selected to avoid major events, adverse weather, or other factors that might skew the amount of parking demand from what would be considered a typical amount of parking need. In addition to the weekdays, "typical" weekend counts are also conducted to ascertain the level of parking demand on Saturdays or Sundays. Since downtown Amherst typically has events nearly every weekend, an average-sized event day was counted.

The study team conducted utilization counts on three days in early April 2016: **Saturday, April 9th** from 9 a.m.to 9 p.m., **Saturday, April 23rd** from 9 a.m. to 11 a.m. (which coincided with a downtown event) and **Thursday, April 28th** from 7 a.m. to 9 p.m. While the parking counts represent a limited data set, their very similar utilization patterns suggest that they are sufficient to draw conclusions about parking patterns in Amherst's downtown area.

Key Findings

- Parking is busiest at 1 p.m. on a weekday. At this time, parking in the Boltwood Lot is at capacity, as are several downtown on-street block faces.
- Parking utilization is similar on the weekend to the weekday, but it peaks at slightly later times.
- The "core" of downtown (closest to Amity & Pleasant) starts to get busy by 9 a.m. on weekdays and continues to experience concentrated demand throughout the day.
- Permit spaces on Amity are very busy; others have availability throughout the day.
- Parking in the downtown core increases substantially in the evening as on-street and Town Hall parking regulations end. In particular, parking on Main, Amity, and Pleasant Streets close to the core is at capacity.
- On the weekend, parking in the core at 7 p.m. (after the meters shut off) is extremely busy with most on-street block faces in the core—as well as public parking lots—completely full. However, available public parking exists just beyond the core—even more so in several restricted lots.
- On a day with two special events (Soccerfest and the Farmers Market) parking is approximately 50% full.

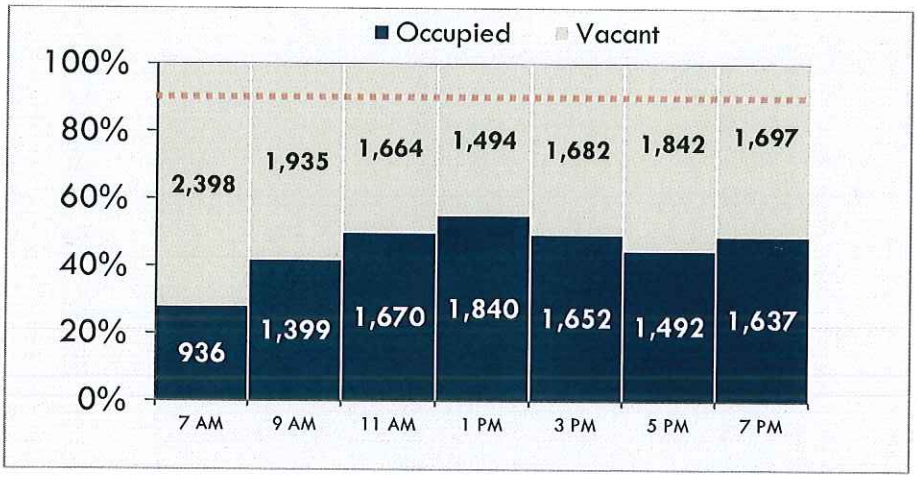
Availability Standards

Parking utilization counts tally how many cars are parked at a given time in the various on- and off-street areas, and are used as a measure of the general parking demand in an area. Industry standards indicate that a parking facility that is over 90-95% occupied is considered functionally full, which means that it will be difficult for a driver to find a parking space. The "ideal" parking availability per lot or block face is between 10-20%, meaning that the parking is well-used but there are still available spaces.

Weekday Parking Utilization

In Downtown Amherst, the highest levels of parking demand vary throughout the study area and throughout the day. Figure 5 shows how utilization changes throughout the day on a typical weekday.

Figure 5 **Study Area Weekday Parking Utilization**



This utilization data has also been entered into a Geographic Information System (GIS) database in order to make assessments of the spatial patterns of car parking activity within the study area. In the early morning, overall utilization is low, with the highest utilization rates in residential lots north of downtown. By 9 a.m., the downtown core spaces begin to fill up. At 11 a.m., permit spaces on Amity Street are also full. Figure 6 shows the utilization map from Thursday at 1 p.m. when the highest utilization rates were observed with over 55% of available spaces occupied within the study area. By 3 p.m., on-street parking in the downtown core is available again. At 5 p.m., even more on-street parking is available, but the City Hall lots fill up because parking restrictions end. At 7 p.m., utilization increases again as on-street parking regulations end and these desirable front-door spaces quickly fill (Figure 7).

Figure 6 Parking Utilization Thursday 1 p.m.

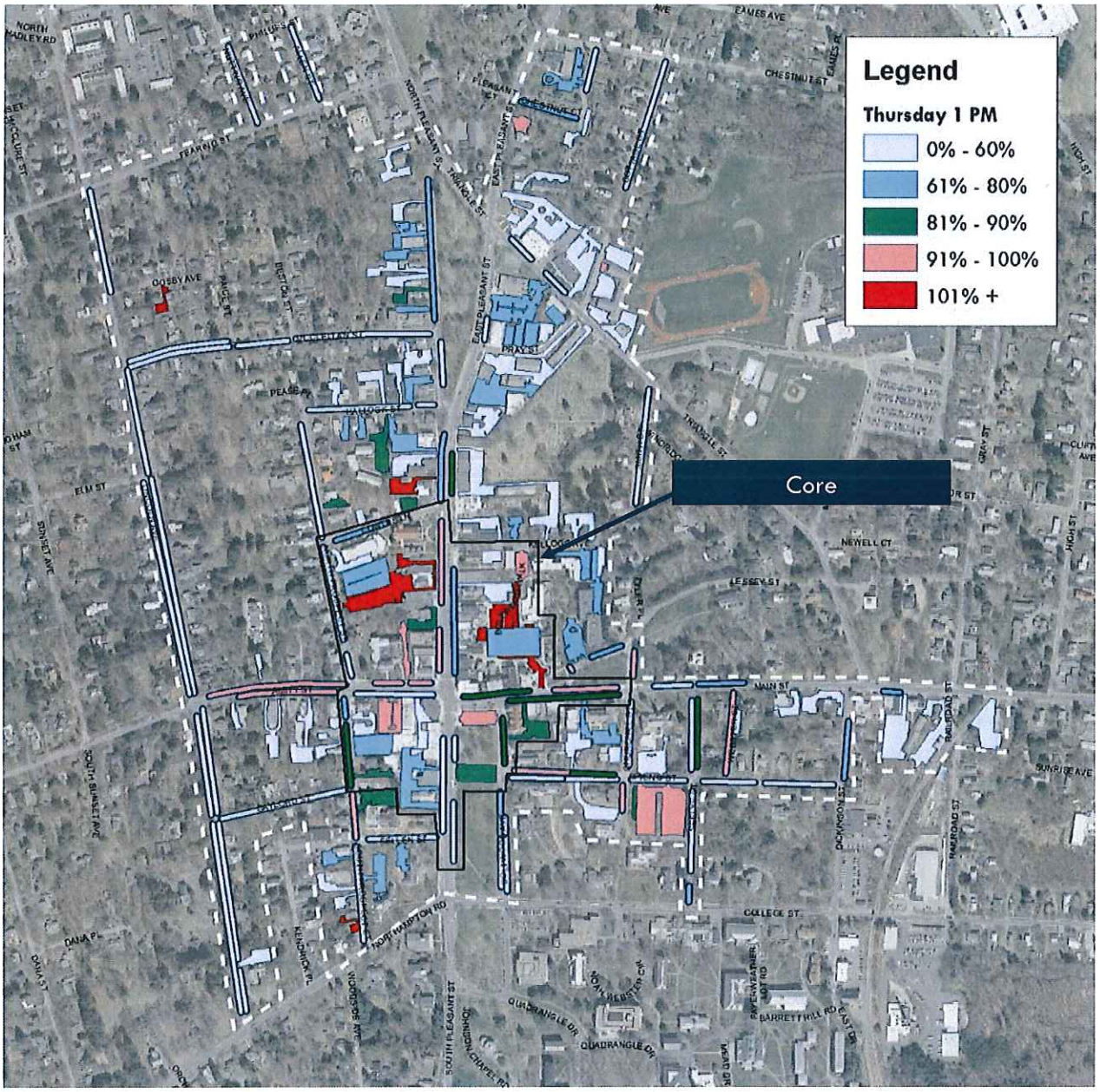
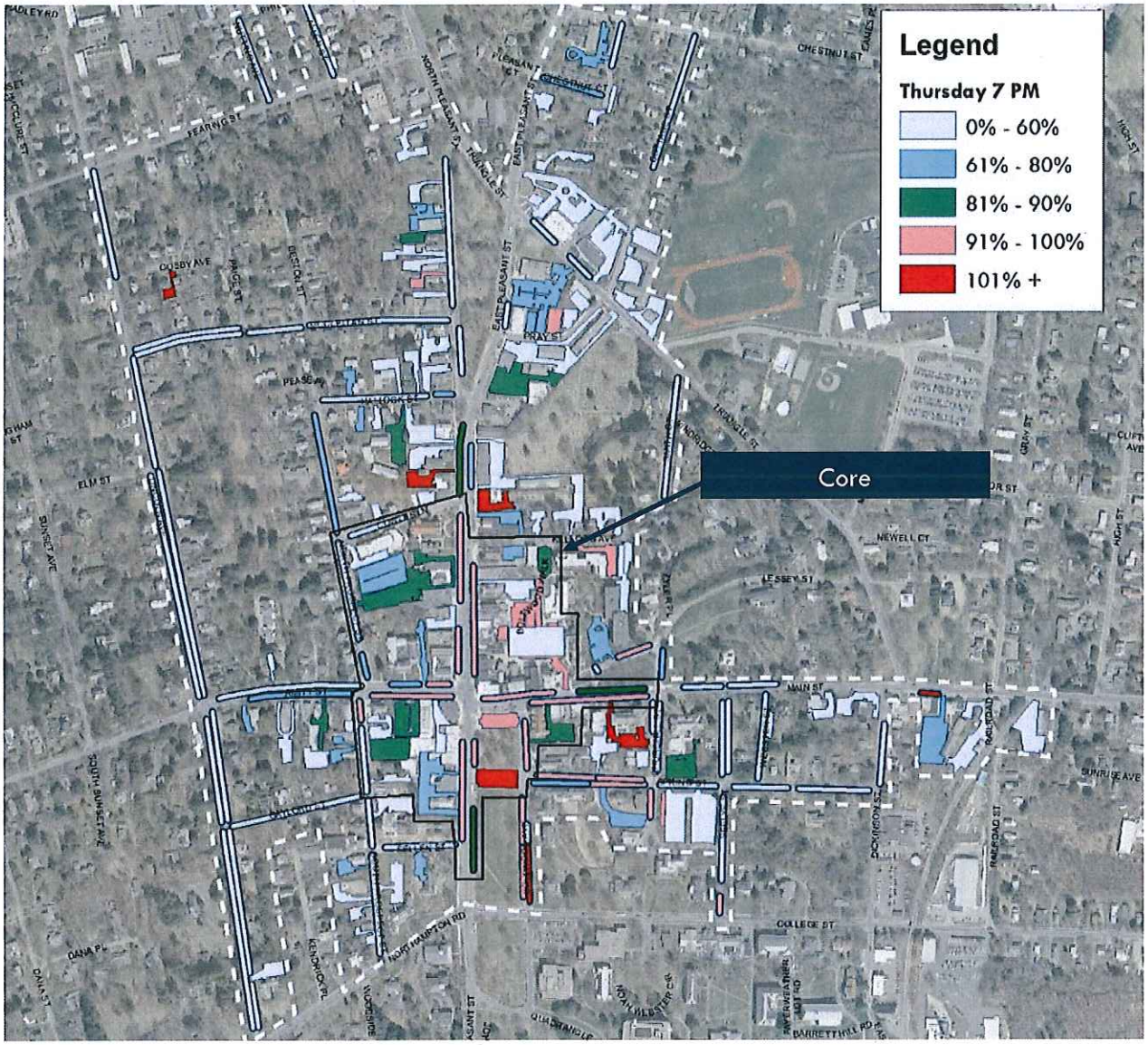


Figure 7 Parking Utilization Thursday 7 p.m.



The utilization maps indicate a pattern of increasing parking demand in parking facilities closer to the core of the downtown. In particular, there are noticeably higher demand rates for the on- and off-street parking facilities closest to Amity and Pleasant Streets. Given the concentration of restaurants and shops in this area, it is not surprising that people frequently park in this area. It is worth noting that many of the spaces in this area, including the Boltwood Garage, are public parking. On Thursdays at 1 p.m., the Boltwood Garage is busier, which is not the case throughout the rest of the day.

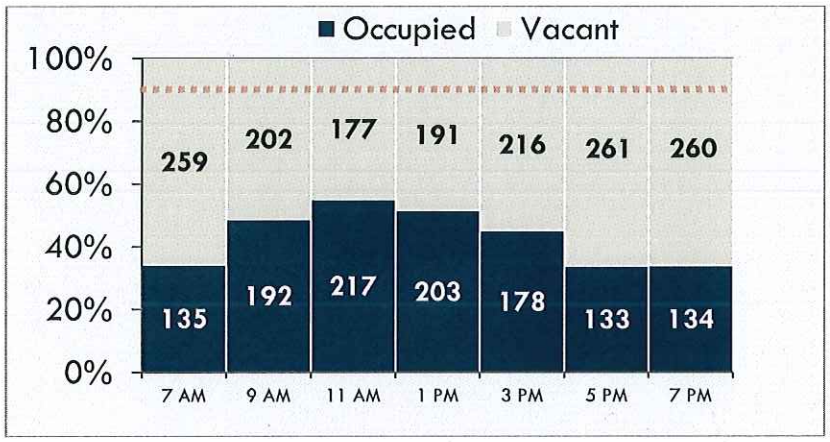
Lower utilization rates are commonly found in the parking areas on and north of Cowles Lane, west of North/South Prospect Street and east of Churchill Street. These areas have lower concentrations of shops and restaurants, particularly the further one moves away from Pleasant Street.

Lower utilization rates however are not limited to the above areas. The parking lots found in the downtown block formed by Amity, Prospect, Pleasant and Sellen Streets show fairly low utilization rates throughout the day, suggesting that either these areas have excess parking supply, or that regulations restrict usage. A full set of utilization maps for various times of day and weekends is included in Appendix A.

Weekday On-Street Permit Parking

Figure 8 shows how on-street permit parking utilization changes throughout the day on a typical weekday. On-street permit parking has a peak utilization of 55% at 11 a.m. and only slightly lower utilization at the overall study area peak of 1 p.m.

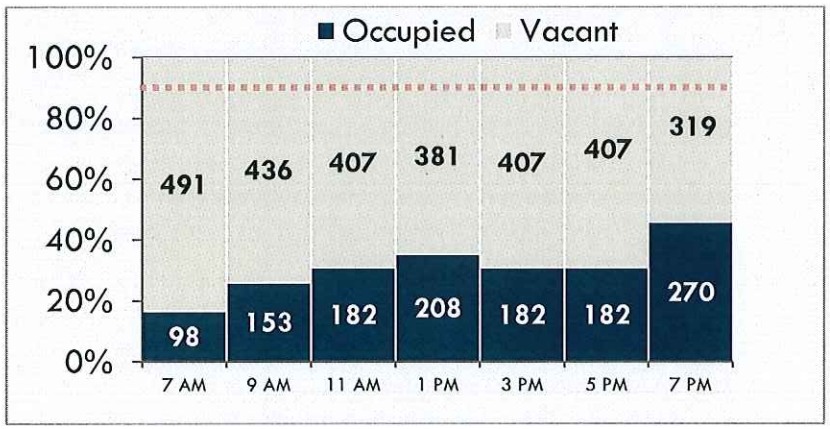
Figure 8 Study Area Weekday On-Street Permit Parking Utilization



Weekday On-Street Metered and Unregulated Parking

Figure 9 shows how on-street metered and unregulated parking utilization changes throughout the day on a typical weekday. "Unregulated on-street parking" has no assigned regulation on a sign, curb, or otherwise. On-street metered and unregulated parking has a peak utilization of 46% at 7 p.m. This is likely because meter enforcement ends at 6 p.m., at which point the downtown core metered spaces become attractive free parking.

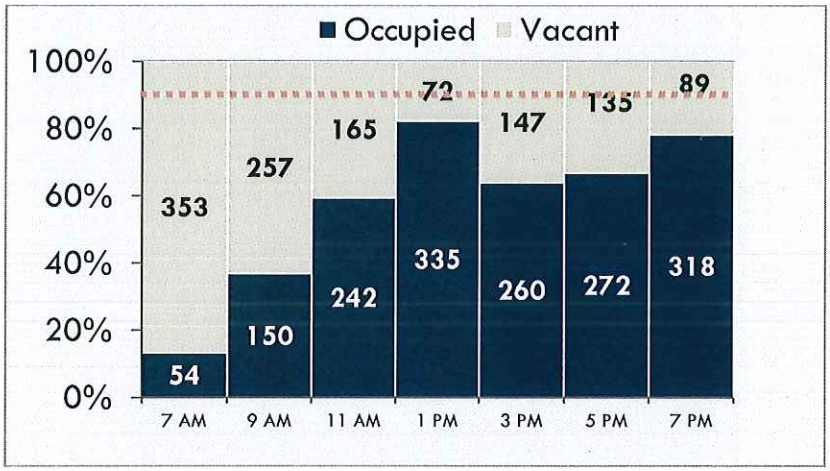
Figure 9 Study Area Weekday On-Street Metered and Unregulated Parking Utilization



Weekday Public Off-Street Parking

Figure 10 shows how public off-street parking utilization changes throughout the day on a typical weekday. Public off-street parking has a peak utilization of 82% at 1 p.m., with a second peak only slightly lower at 7 p.m.. The first peak reflects the high parking demand in general at midday, while the second peak is partially explained by the end of parking restrictions after 5 p.m. in the downtown core parking lots.

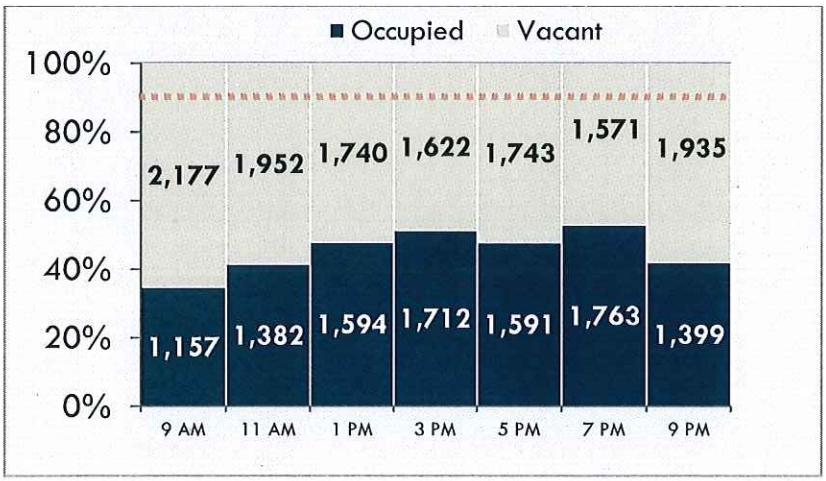
Figure 10 Study Area Weekday Public Off-Street Parking Utilization



Weekend Parking Utilization

Weekend parking utilization in Downtown Amherst has a similar overall pattern to parking utilization on weekdays, but with a greater focus on downtown parking facilities over those further from the downtown core. In addition, the weekend peak occurs in the evenings, rather than at midday like it does on the weekday. Figure 11 shows how utilization changes throughout the day on a typical weekend day.

Figure 11 Study Area Weekend Parking Utilization



2016 Comparison with 2008 PVPC Study

Since the 2008 PVPC Parking Study, there have been some significant changes in downtown Amherst that have impacted parking demand. These changes include:

- The Amherst Cinema reaching full operation
- Increased use and programming of the Jones Library
- New residential development

In addition, there have been significant regulatory changes since the last parking study in 2008, including:

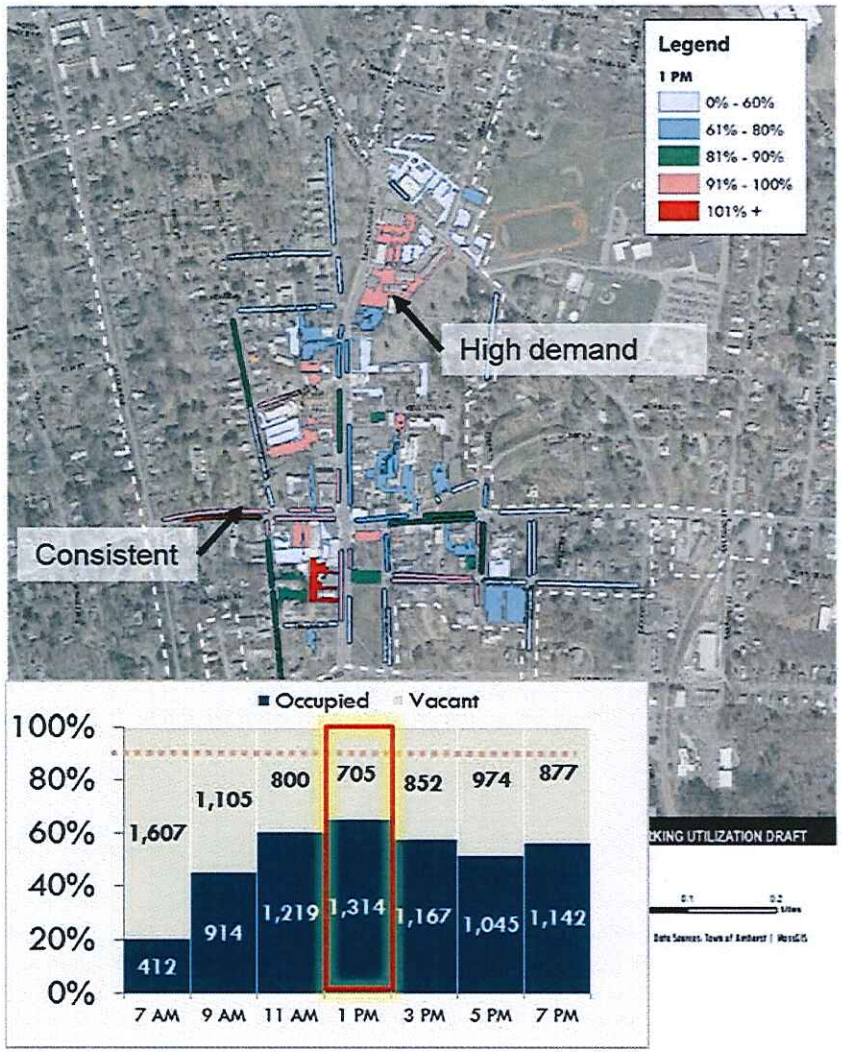
- Reductions in overall on-street supply
- Conversion of approximately 10 on-street spaces to free 15-minute spaces
- Meter rates increased off-street from $0.40/hour to $0.50/hour
- Annual parking permits raised $5 to $25/year
- Gaylord Street and Spring Street added to permit parking
- Permit parking now allowed in any metered space on the lower level of the Boltwood Garage and in the public lot next to the CVS Lot

Despite the changes in the downtown context and parking regulations, **the parking peak is essentially unchanged from 2008 to 2016**[1]. In 2008, there were 705 vacant spaces in the study area at the midday peak while in 2016, 706 spaces were vacant at the midday peak. While the peak has not changed, the spatial pattern of parking demand has changed. Demand for parking in the parking lots along East Pleasant Street has declined while demand for the lots closer to Amity and Main Streets has increased substantially. This reflects a more concentrated downtown parking demand. On the other hand, permit parking along Amity Street has remained consistent (Figure 12).

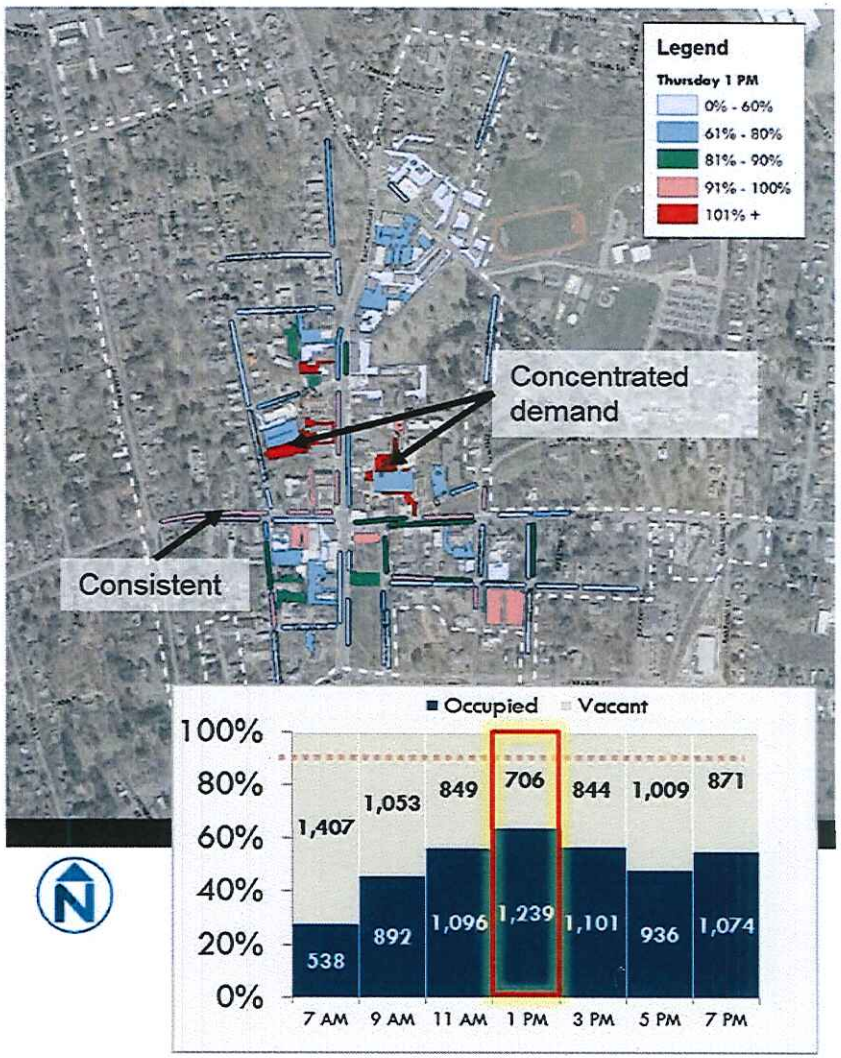
[1] For this comparison, only the same geography was used, which is a subset of the 2016 data. The 2008 study covered a smaller study area.

Figure 12 2008 PVPC Data v. 2016

2008 Parking Data



2016 Parking Data



Parking User Survey

As part of the parking study, a parking user survey was administered from March 14 to June 6, 2016 to better understand the user experience of parking in downtown Amherst. The survey asked questions regarding why and how often people visit downtown Amherst, as well as their general experience parking in the area. The survey was used to determine how the downtown parking situation is perceived. Overall, the survey had about 150 responses from Amherst residents, employees, and visitors.

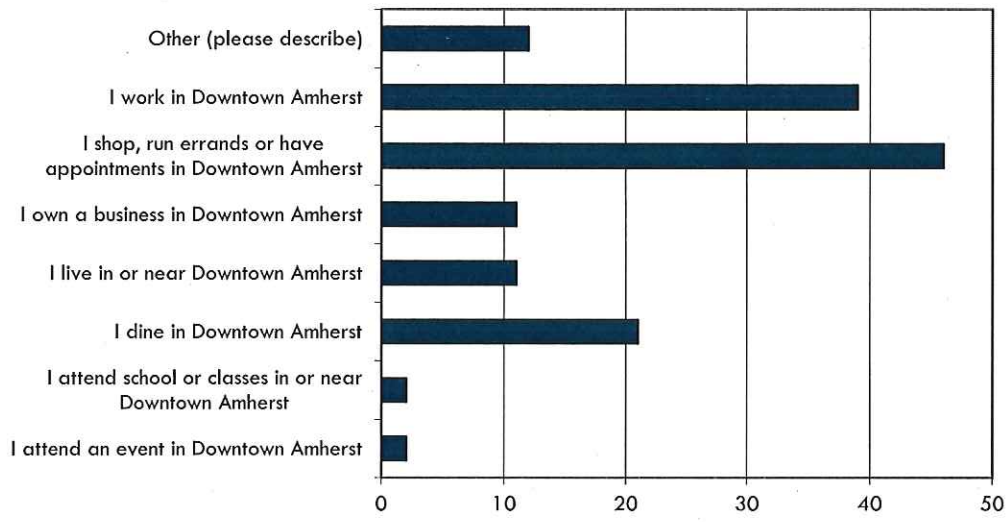
Key Findings

- Long-term parking is common in Downtown Amherst and generally found in private off-street and permitted on-street spaces.
- Many people find parking close to their final destination, but it is more common among employees than customers.
- While a majority of respondents have at some point failed to find parking and left, most have only experienced this rarely or several times a year.
- The most important factors in selecting a parking space were the ease of finding a parking space and the location of the space in terms of proximity to a final destination.

Reason to Visit Downtown

The largest group of respondents to the survey (50%) were customers. These respondents stated they shop, run errands, have appointments, or dine in downtown Amherst. The second-largest group were employees (33%), including respondents that work in downtown Amherst and respondents that own a business there.

Figure 13 Reason to Visit Downtown



Type of Parking

Many respondents parked in downtown Amherst for more than four hours at a time (Figure 14). These long-term parkers generally used private lots and on-street parking, indicating that many are likely permit-holders. Public parking lots were much more popular than private parking lots for short-term parkers that parked for less than four hours.

Figure 14 Where Respondents Typically Park (Regulation)

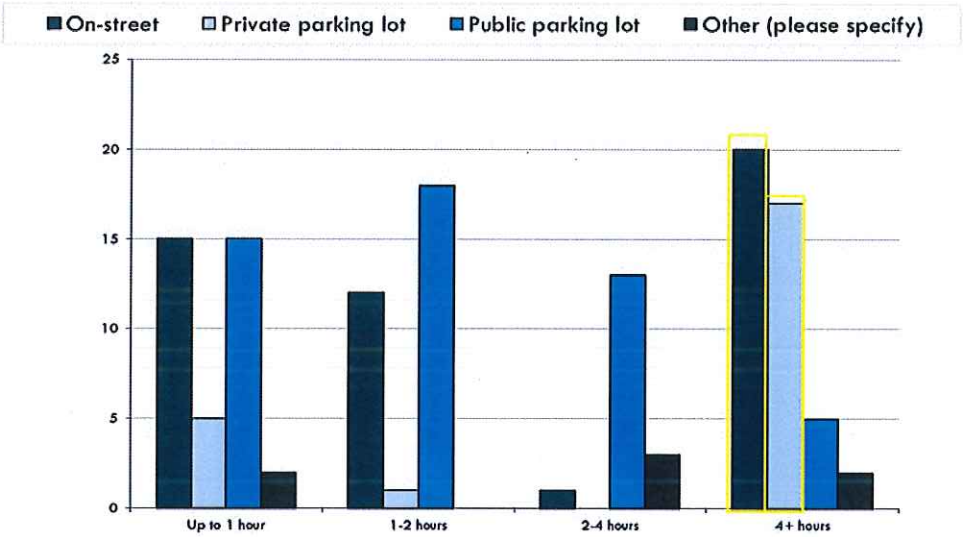
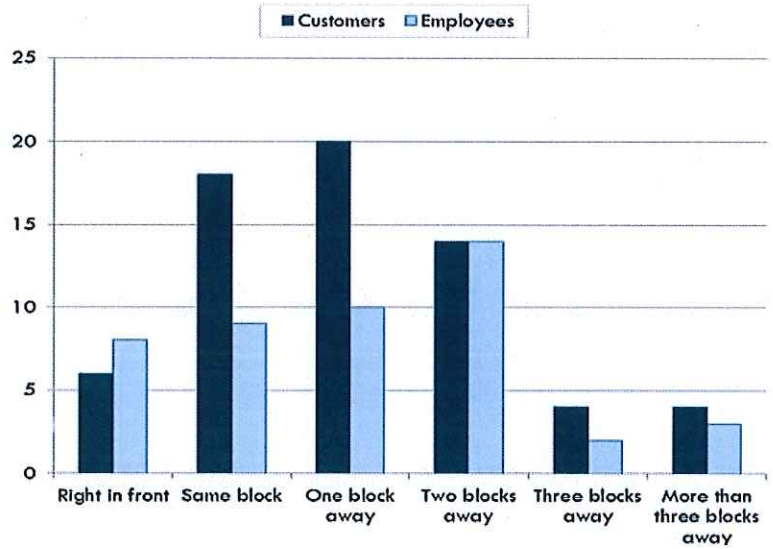


Figure 15 shows where respondents were able to park by user group. Notably, employees are generally more likely to find a spot within one block of their destination than customers. Many customers also succeed in finding a spot near to their destination, but some lose out to employee parking in choice locations adjacent to destinations.

Figure 15 Where Respondents Typically Park (Location)



Parking Perceptions

When asked, "Have you ever failed to find parking and just left?" over half of respondents (57%) stated that they had. However, respondents were also asked how often they had failed to find parking and left. Figure 16 shows that this has happened rarely or several times a year for most respondents.

This matters because the perception of whether or not parking will be available when people travel to downtown Amherst is just as important as whether or not it will actually be there when they arrive. Although parking may not always be an issue, the days when it is an issue can leave a lasting impression on users.

Figure 16 Frequency that Respondents Cannot Find Parking

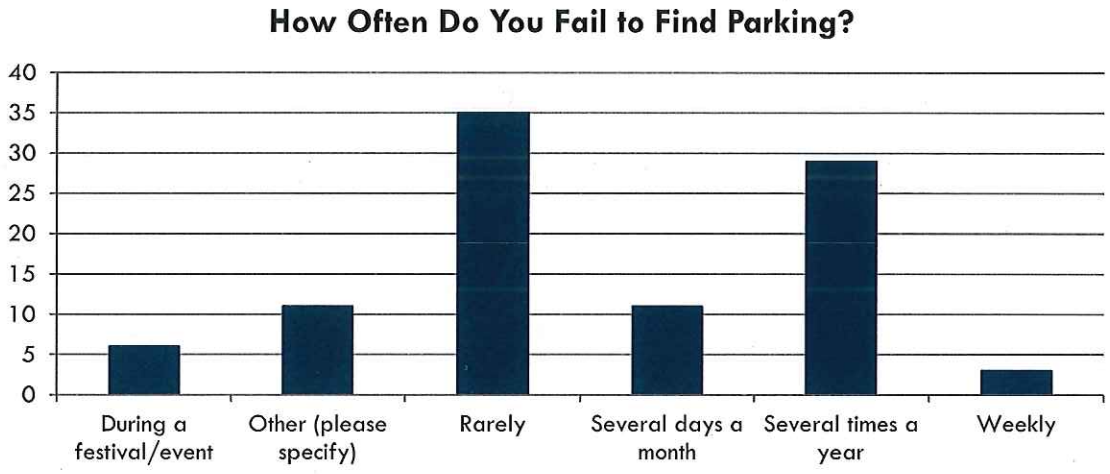
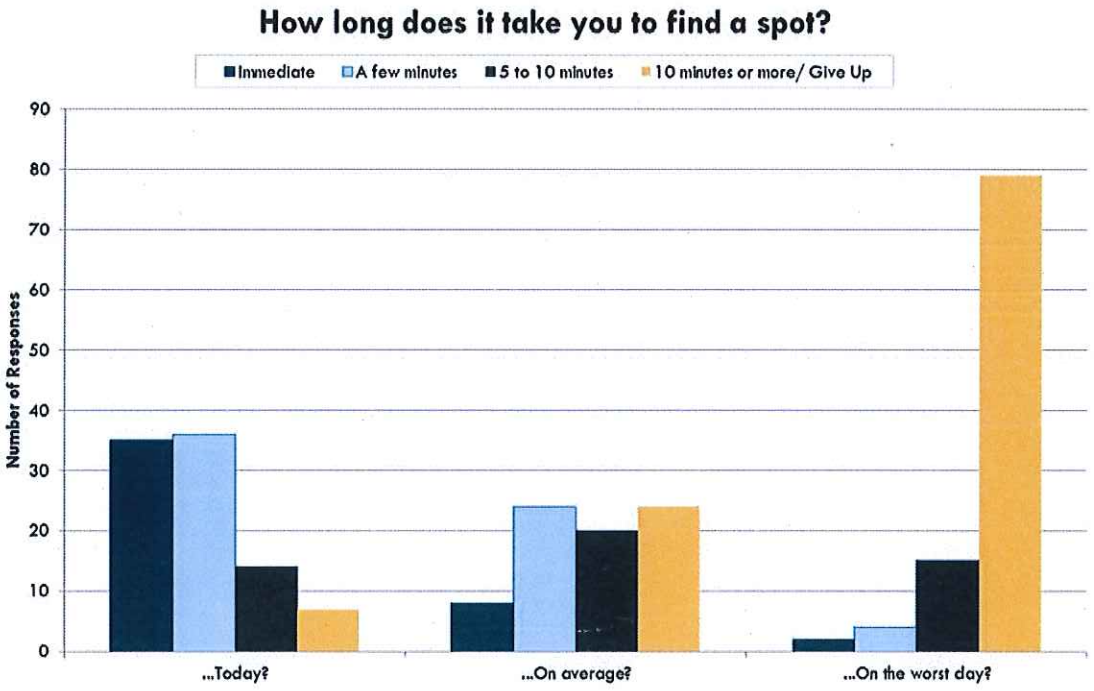


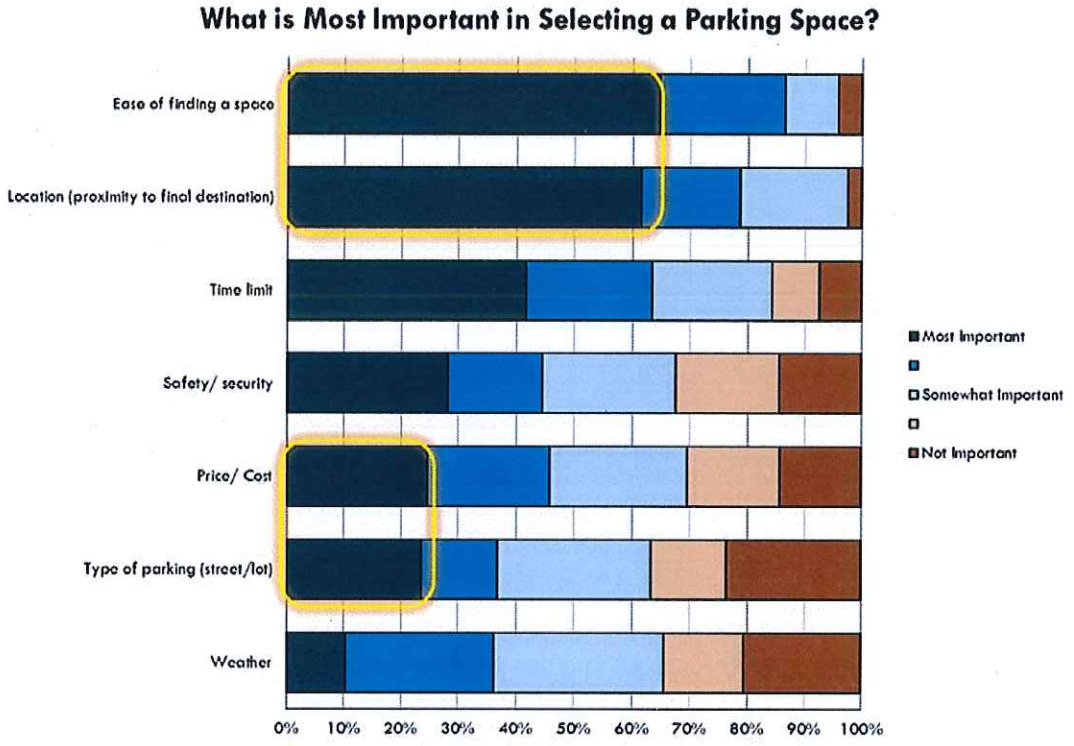
Figure 17 reinforces the importance of perception in how difficult people think it is to find parking. Most respondents felt that on average, finding parking was not immediate, and many indicated that it took over five minutes. However, when asked how long it took to find a spot today, the vast majority of respondents stated it took less than five minutes or that they found parking immediately. This discrepancy highlights the difference between how people perceive parking as opposed to their actual lived experience.

Figure 17 Time it Takes Respondents to Find a Parking Spot



Respondents stated that the most important factors in selecting a parking space were the ease of finding a parking space and the location of the space in terms of proximity to their final destination (Figure 18). These were perceived to be the most important factors to nearly triple the number of respondents that said the same for the cost of the parking spot or type (as in on-street or parking lot). Interestingly, price was less of an issue than location and ease, indicating that users might be willing to pay more to park closer to destinations.

Figure 18 Parking Preferences



Source: Survey respondents

Existing and Future Demand Patterns

Use of downtown Amherst's existing parking assets is as important to understand today as it is for all that Amherst hopes to accomplish in its downtown in the future. Parking availability and travel choices underpin business and land development in downtown Amherst.

This analysis documents the ratios between the built environment, parking supply, and parking demand in order to determine how existing parking is used in downtown Amherst. This Amherst-specific parking demand ratio allows the team to model the demand for additional development in the future. For the Town, it also establishes a baseline for potential future adjustments to parking supply and regulations.

Key Findings

- The study area has nearly 400 more parking spaces overall than would be recommended by a traditional demand model that assumes every use needs its own dedicated parking.
- The shared parking demand model and actual observed data both show that the study area actually has a surplus of 1,200 spaces at peak demand.
- When run through the shared parking demand model, both an expected development scenario and a maximum development scenario show that future parking demand can be accommodated within existing facilities.

Parking Demand Modeling Methodology

To create a baseline of demand, the team used existing land use data from the Amherst GIS department, which was based on assessing data obtained in the Spring of 2016. The database included land uses at a parcel level in a GIS shapefile. The database included detailed information such as building square footage, use type, and use descriptions for all existing buildings in the study area (Figure 19).

Figure 19 Land Use in Downtown Amherst

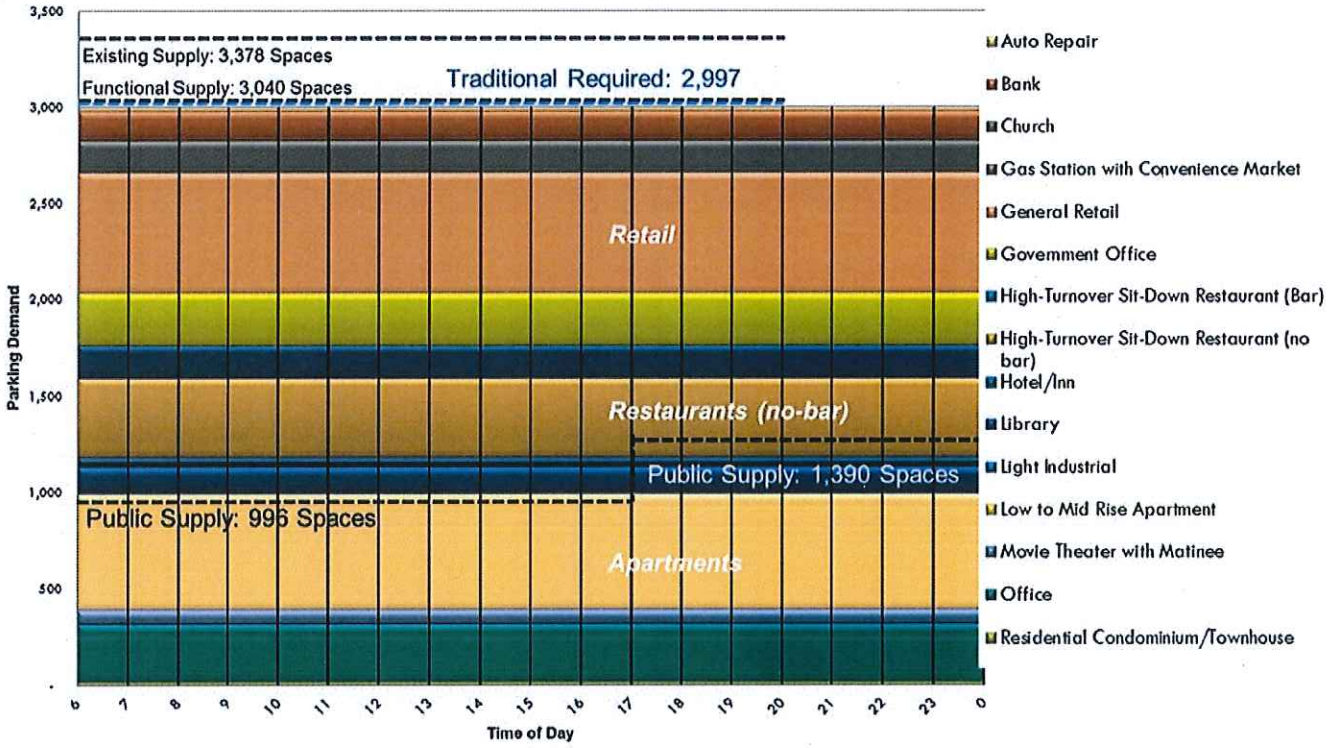
Land Use	Size	Units
Light Industrial	20,000	square feet
General Retail	212,000	square feet
Auto Repair	7,000	square feet
Gas Station	4	pumps
Hotel/Inn	55	Rooms
Bank	38,000	square feet
Restaurant (no bar)	74,000	square feet
Restaurant (Bar)	13,000	square feet
Movie Theater	280	seats
Church	43,000	square feet
Library	48,000	square feet
Office	150,000	square feet
Government Office	65,000	square feet
Apartments	530	units
Condos	14	units

To determine parking demand for a development, a transportation analyst typically compares the size of the development with standardized parking generation rates related to the size of a given land use. The Institute of Transportation Engineers (ITE) produces a report titled *Parking Generation*, which is the current national standard in determining parking demand for a development.[2] For an area with multiple uses such as downtown Amherst, the typical approach would be to sum the total demand by use as shown in Figure 20, below. The line "traditional required" denotes the total parking required using this approach.

The models in this analysis assume that no more than 90% of the parking supply should be full. At 90%, parking feels functionally "full" as only one of every 10 spaces is available. In addition, this 10% reserve accounts for additional operational reserve as demand fluctuates day-to-day. This functional supply is shown on each chart as "Functional Supply."

[2] ITE standards are based on parking demand studies submitted to ITE by a variety of parties, including public agencies, developers and consulting firms.

Figure 20 Parking Demand According to Industry Standards



The typical ITE-based approach assigns a dedicated parking supply to each use, which can result in parking being overbuilt. While it is the most robust available database of observed parking demand, ITE parking rates are often based on suburban or rural parking ratios, and their static application does not reflect the actual demand profile throughout the day in a mixed-use downtown area. In Amherst, Figure 20 shows that the study area nonetheless has nearly 400 more spaces overall than ITE would recommend, suggesting that Amherst supply programs and requirements are higher than even this traditional approach to demand would recommend. Many of these spaces are currently restricted from public use.

In reality throughout the day, different uses have different peak demands: for example, an office may have a high demand until 5 p.m., and a restaurant open for dinner may have a high demand only after 5 p.m., indicating "staggered peaks" which can utilize the same parking supply as is typical in the Boltwood Garage and other Amherst facilities. Moreover, in mixed-use areas, customers and visitors can visit multiple destinations on foot and only park once. For each additional use someone walks to after parking, an additional parking space is not necessary. This concept is called "internal capture." In contrast, ITE standards suggest that all uses should have their own dedicated supply of parking, rather than allowing parking to be shared[3].

[3] The ITE Parking Generation Manual actually recommends applying these reductions to its rates, but no detailed methodology is provided, resulting in frequent abuse of its data.

To more accurately model downtown parking activity, Nelson\Nygaard used an adapted land use model from the Urban Land Institute's (ULI) Shared Parking Manual (2nd Edition, 2005). Besides capturing the "staggered peaks" of demand from various uses by time of day, the model is tailored to include a parking demand reduction for using the same parking spaces at the same time for different land use activities, which is known as "internal capture."

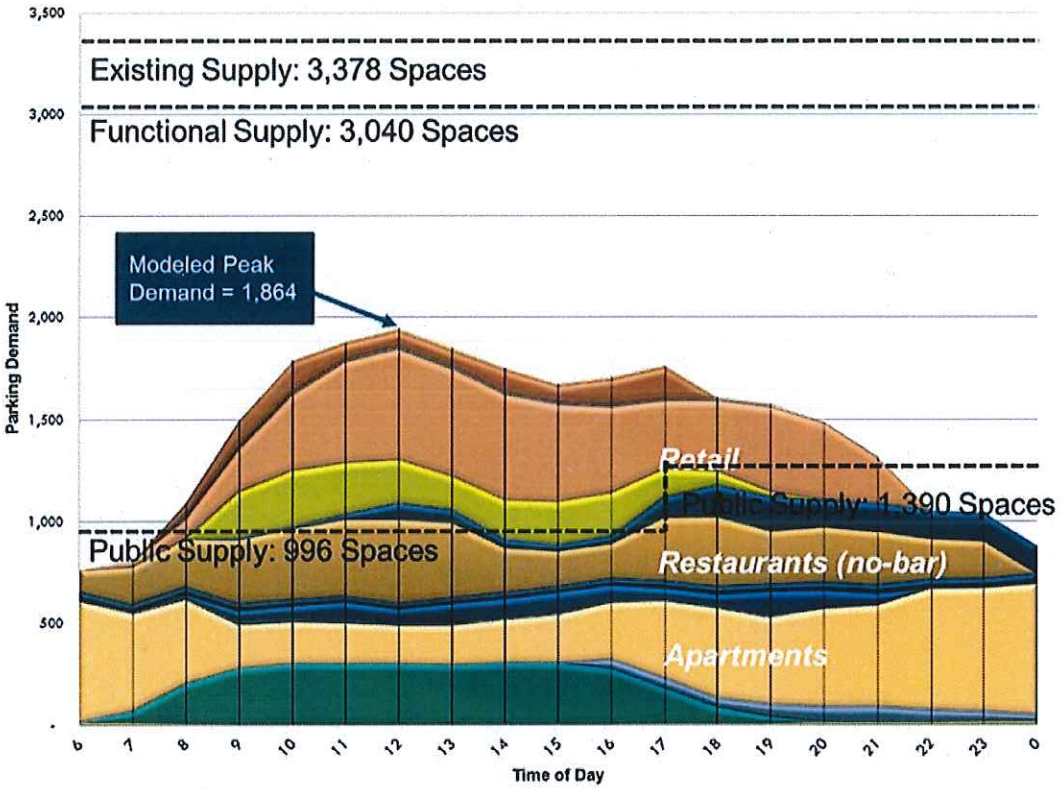
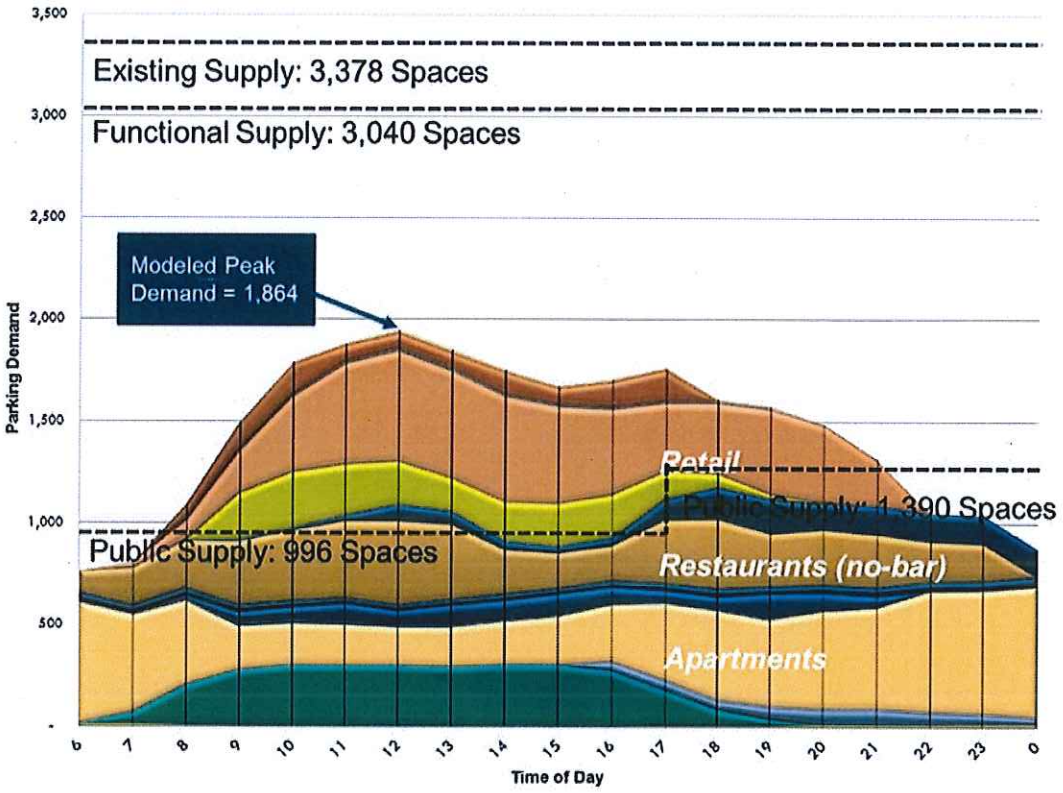


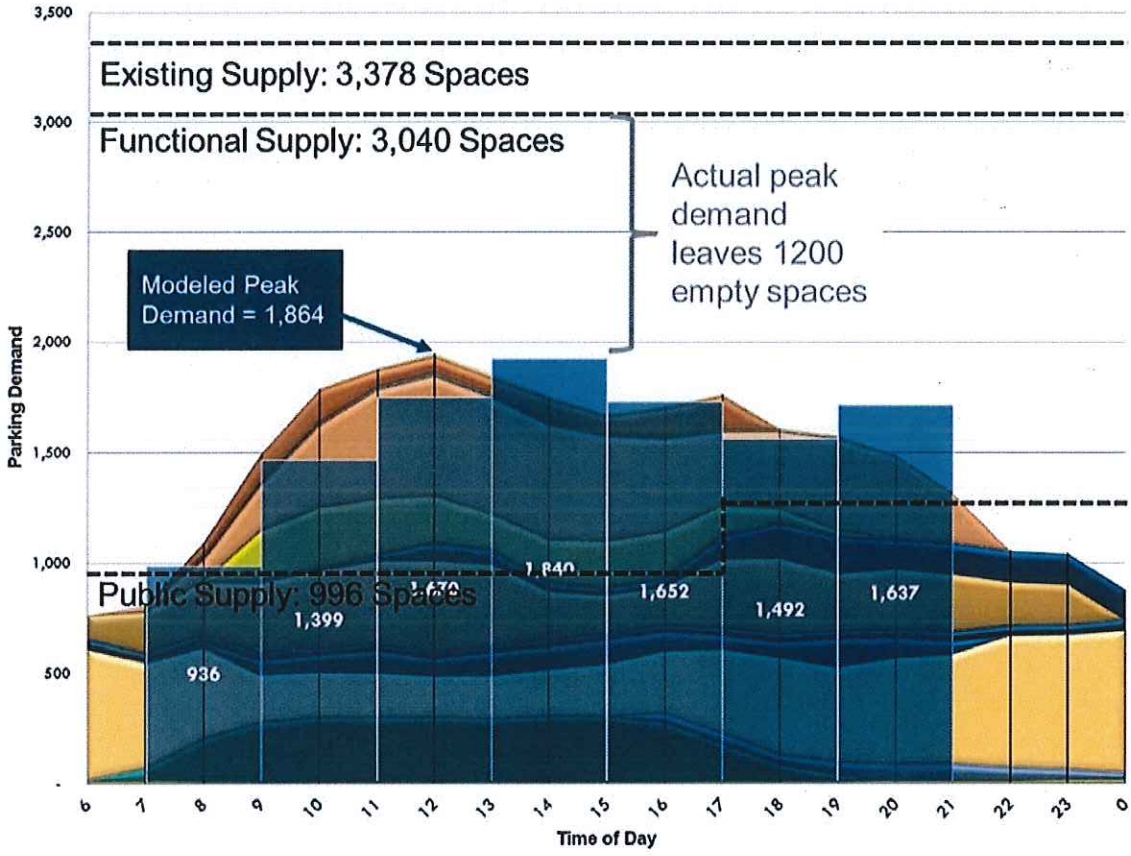
Figure 21 shows the resulting curves for the study area when time of day and other contextual variables are considered.

Figure 21 Parking Demand According to Shared Demand Model



This model can be calibrated using the observed counts in the study area. First, the modeled demand is based on the factors described above, simulating the expected actual parking demand throughout the course of an average weekday in downtown Amherst. Parking utilization survey counts collected within the same activity area are then overlaid on top of the modeled demand curve, and that curve is adjusted based on observed demand patterns. Figure 22 shows that although typical demand based on national standards would peak around 12:00 p.m., the observed counts peaked later than that, at 1:00 p.m. on a weekday. However, the modeled peak and the observed peak are similar in scale, allowing the model to be used for reliable estimation of demand from future land uses.

Figure 22 Shared Demand Model versus Observed Demand



Future Parking Demand

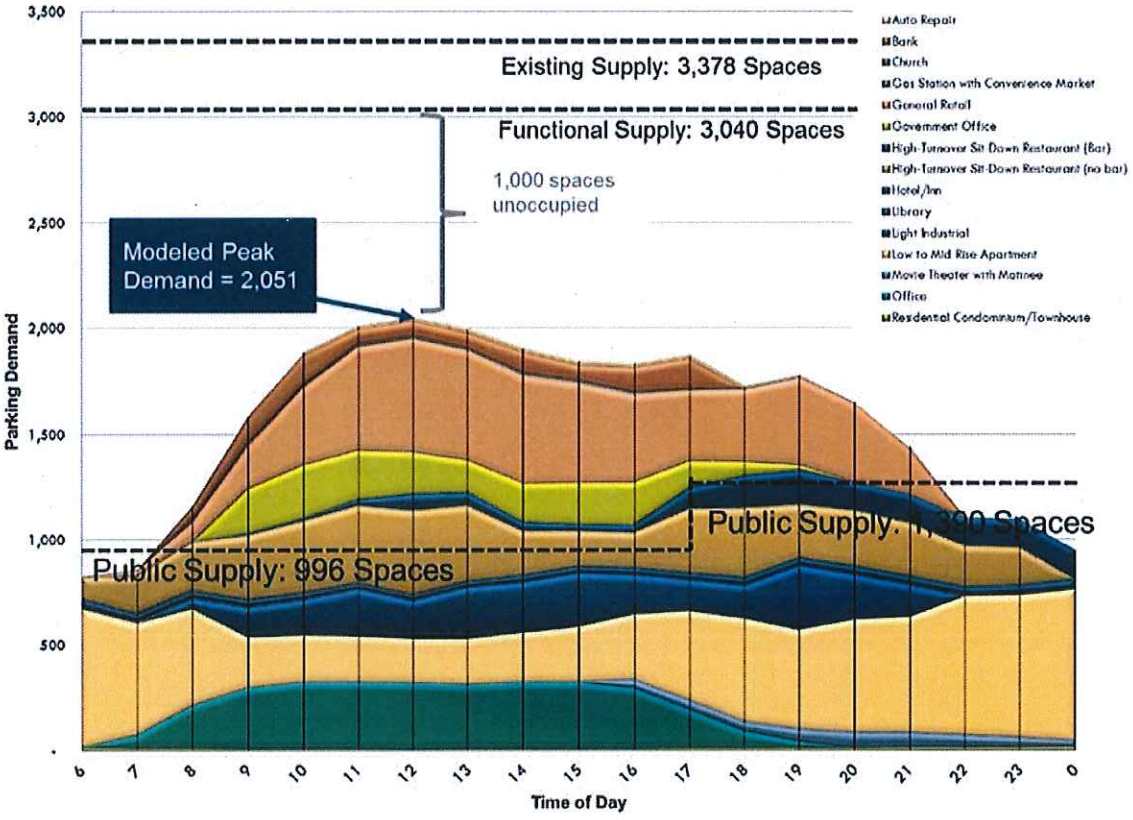
Using this model, the team is able to estimate demand from future land uses in downtown Amherst. Based on possible development proposals provided by Town staff, Nelson\Nygaard estimated additional land use development for the area to add to the shared use parking model, shown in Figure 23.

Figure 23 Future Additional Land Use Development Scenario

Add'l Use	Size
Cultural	20,000 sf
Apartments	100 units
Office	20,000 sf
Retail	5,000 sf

The modeled results for this scenario show that increased parking demand can likely be accommodated in existing parking spaces. The **estimated increased peak demand is nearly 200 vehicles,** which could be accommodated with existing supply that is open to the public, including both on- and off-street parking.

Figure 24 Future Shared Parking Demand Model



The Nelson\Nygaard team also modeled a "maximum development" scenario with additional land use development to add to the shared use parking model, shown in Figure 25.

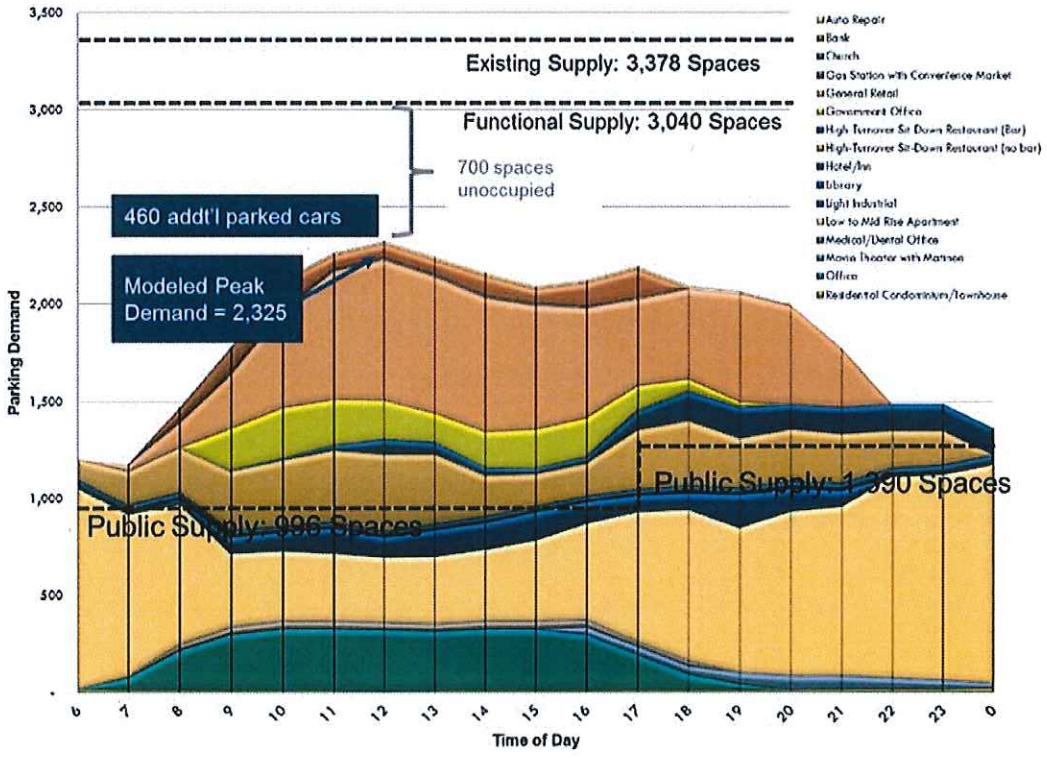
Figure 25 Maximum Future Additional Land Use Development Scenario

Add'l Use	Size
Cultural	20,000 sf
Apartments	465 units
Office	20,000 sf
Retail	80,000 sf
Medical Office	15,000

The modeled results for this scenario show that increased parking demand could still likely be accommodated in existing parking spaces. Using the calibrated parking model, the team estimated increased demand from the same additional land use development as the first scenario, but with the addition of 365 additional apartments, 75,000 additional square feet of retail space and 15,000 square feet of medical office space.

The **estimated increased peak demand is 460 additional vehicles above today**, which could be accommodated with existing supply. While some of that unoccupied supply may not currently be open to the public, it may be possible to share private parking (as happens today) without adding new supply.

Figure 26 Future Shared Parking Demand Model for Maximum Development Scenario



Downtown Core Shared Use Analysis

The shared parking model was also applied to the core of downtown, as identified in Figure 1. Core land uses include:

Figure 27 Land Uses in the Core

Land Use	Size	Units
General Retail	109,000	Square Feet
Bank	33,000	Square Feet
Sit-Down Restaurant (no bar)	44,000	Square Feet
Sit-Down Restaurant (Bar)	5,000	Square Feet
Movie Theater	280	Seats
Church	32,000	Square Feet
Library	48,000	Square Feet
Office	76,000	Square Feet
Government Office	53,000	Square Feet
Apartments	160	Units
Condos	1	Units

Figure 28 and Figure 29 show the traditional and shared demand models for the core. The model is a good fit, showing a peak similar to that found in the actual counts. The modeled peak is earlier than in Amherst, reflecting a slightly later lunch demand in Amherst as compared to the national data sources. However, evening demand for restaurants in Amherst is 25-50 percent higher than the model predicts. Thus, while this model can be used for reliable estimation of peak midday demand from future land uses, further refinement is warranted for more detailed future land use analyses to more accurately represent evening parking demand.

Figure 28 Core Parking Demand According to Industry Standards

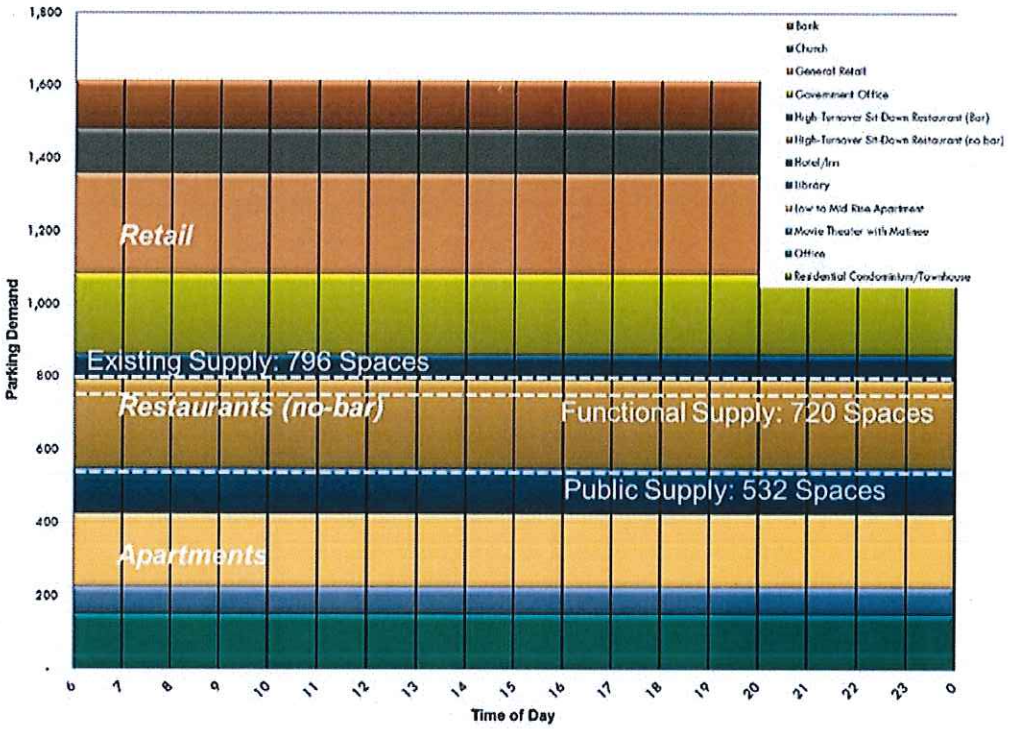
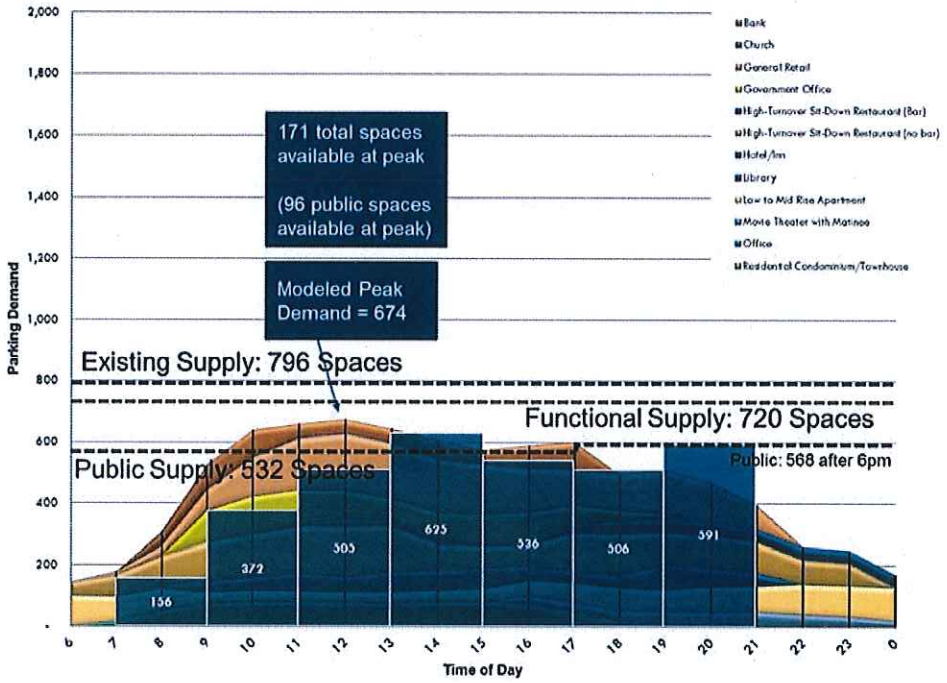


Figure 29 Core Shared Demand Model versus Observed Demand



*includes TDM and internal capture adjustments

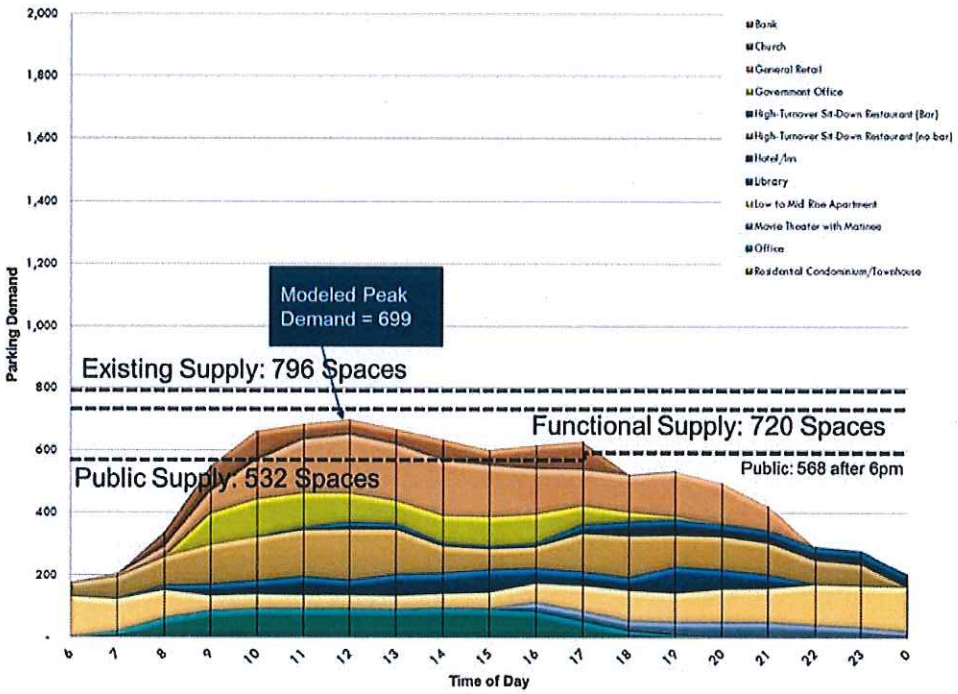
Based on possible development proposals provided by Town staff, Nelson\Nygaard estimated additional land use development for the area to add to the shared use parking model, shown in Figure 30.

Figure 30 Future Additional Land Use Development Scenario (Core)

Add'l Use	Size
Apartments	50 units
Office	10,000 sf
Retail	2,000 sf

The modeled results for this scenario (Figure 31) show that increased parking demand can likely be accommodated in existing parking spaces. The **estimated increased peak demand is about 25 vehicles,** which could be accommodated with existing supply that is open to the public, including both on- and off-street parking.

Figure 31 Future Shared Parking Model



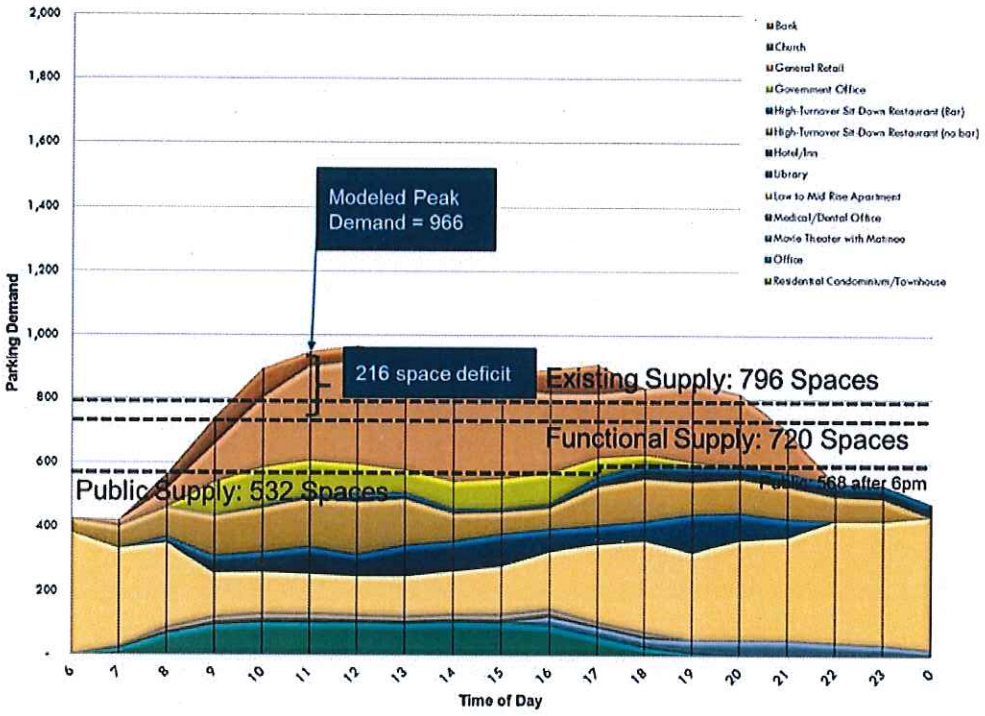
*includes TDM and internal capture adjustments

The Nelson\Nygaard team also modeled a "maximum development" scenario with additional land use development all occurring in the core, shown in Figure 32 and Figure 33. This analysis shows that at peak, there would be a 216 space deficit, even if all existing parking was completely shared. At this point in development, the Town would need to consider an expansion of supply, expanded access to supply beyond the core, and/or strategies to limit travel by personal vehicle.

Figure 32 Maximum Future Additional Land Use Development Scenario

Add'l Use	Size
Cultural	20,000 sf
Apartments	465 units
Office	20,000 sf
Retail	80,000 sf
Medical Office	15,000

Figure 33 Future Shared Parking Demand Model for Maximum Development Scenario (Core)



Stakeholder Meetings

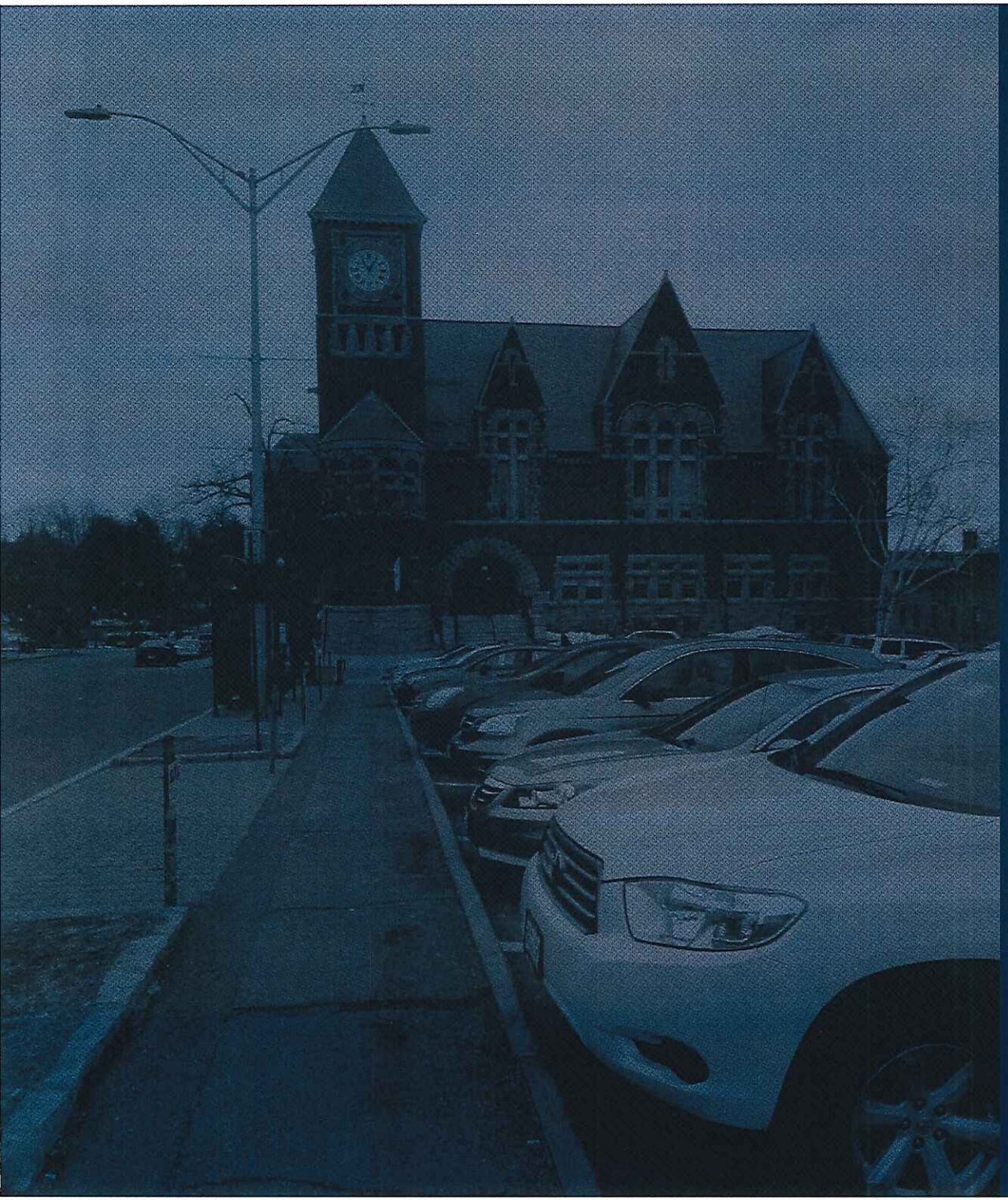
The study team met with stakeholders for "roundtable" discussions on Tuesday, June 28 in Town Hall. A complete stakeholder list can be found in Appendix B, but groups consisted of:

- Parking Working Group
- Business Owners/Representatives
- Town Staff
- Residents

The roundtable format encouraged discussion, and with the exception of the meeting with Town Staff, Town representatives were not present so that the team could encourage candid conversation. Generally, stakeholders expressed concerns along the following themes:

- **Public Parking Lot behind CVS:** Stakeholders noted that this lot is underutilized while the free CVS lot for customers only is quite full.
- **Information:** Participants noted that one-time users don't pay or are confused by the system, which they then remember as unwelcoming. Meanwhile, locals find it easy to park, but they know the system. In contrast, parking in similar towns such as Northampton is considered to be easy to understand.
- **Changes in System vs. Demand:** Although the parking system has not changed significantly in several years, the downtown has. For example, the change from retail to restaurant demand is believed to have driver higher parking use throughout the day.
- **Parking Perceptions:** Many see the Town using parking as a revenue source, rather than an economic development tool.
- **Additional Parking Supply:** The tension between locals and business owners, as indicated at the Parking Forums, persists. Locals are able to find parking, while business owners note that visitors cannot always find available spaces. For business owners, competition with other venues that have more available parking is a significant concern, as is providing easy and convenient access for customers.
- **Safety:** The garage is an issue because there is no constant security presence and there are some homeless people who stay in the stairwells.
- **Student Overflow and Use of Resources:** Some feel that students take advantage of downtown parking that is "free" or not enforced to then commute to campus by bus. Others questioned the use of parking funds for free student transit.
- **Permit Parking:** Generally, this is working well for enforcement and demand. Demand for long-term on-street parking seems to be concentrated on Seelye and Spring Streets.
- **Pricing:** Generally, tickets are cheap compared to permits, and this system might need to be revisited. However, there is concern that raising on-street rates would be poorly received.
- **Downtown is Valuable:** Although parking is free elsewhere (Route 9, etc.) the environment that downtown provides is unique and valuable, and this should be promoted.
- **Development:** A discussion of whether the Town should provide parking for properties or if those developers should provide financial support for parking.
- **Farmers Market:** Closing the lot for the Farmers Market is problematic for some business owners.

APPENDIX A: EXISTING PARKING DEMAND PRESENTATION (JUNE 2016)



Amherst Downtown Parking:

Existing Parking Supply and Demand

June 2016

NELSON NYGAARD

Existing Parking Facilities Supply and Demand

Agenda

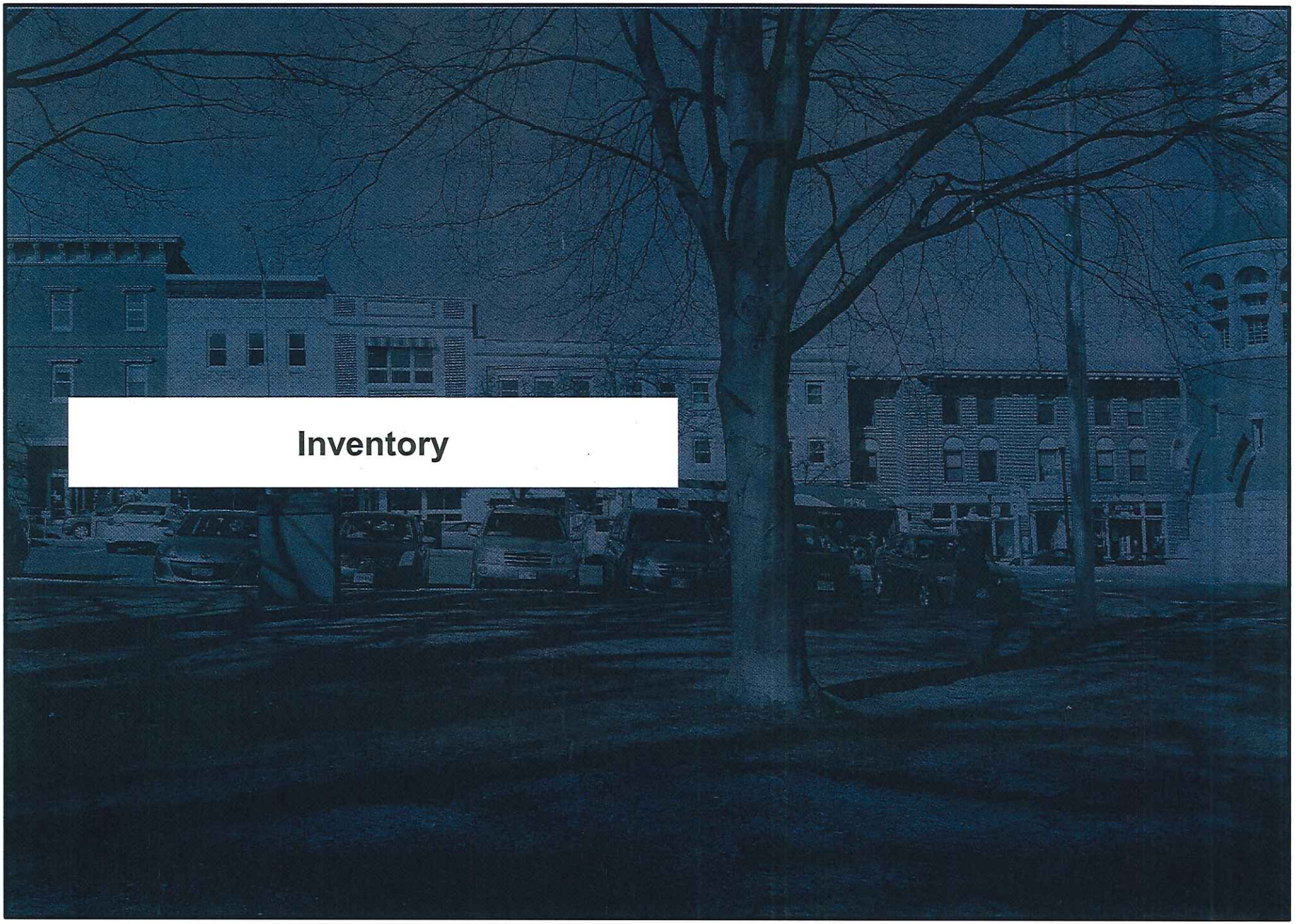
- Background
- Inventory
- Utilization
  - Core Utilization
- Survey
- Land Use Analysis

Downtown Parking Forums

- Businesses see a lack of predictable parking
- Some residents don't see a problem

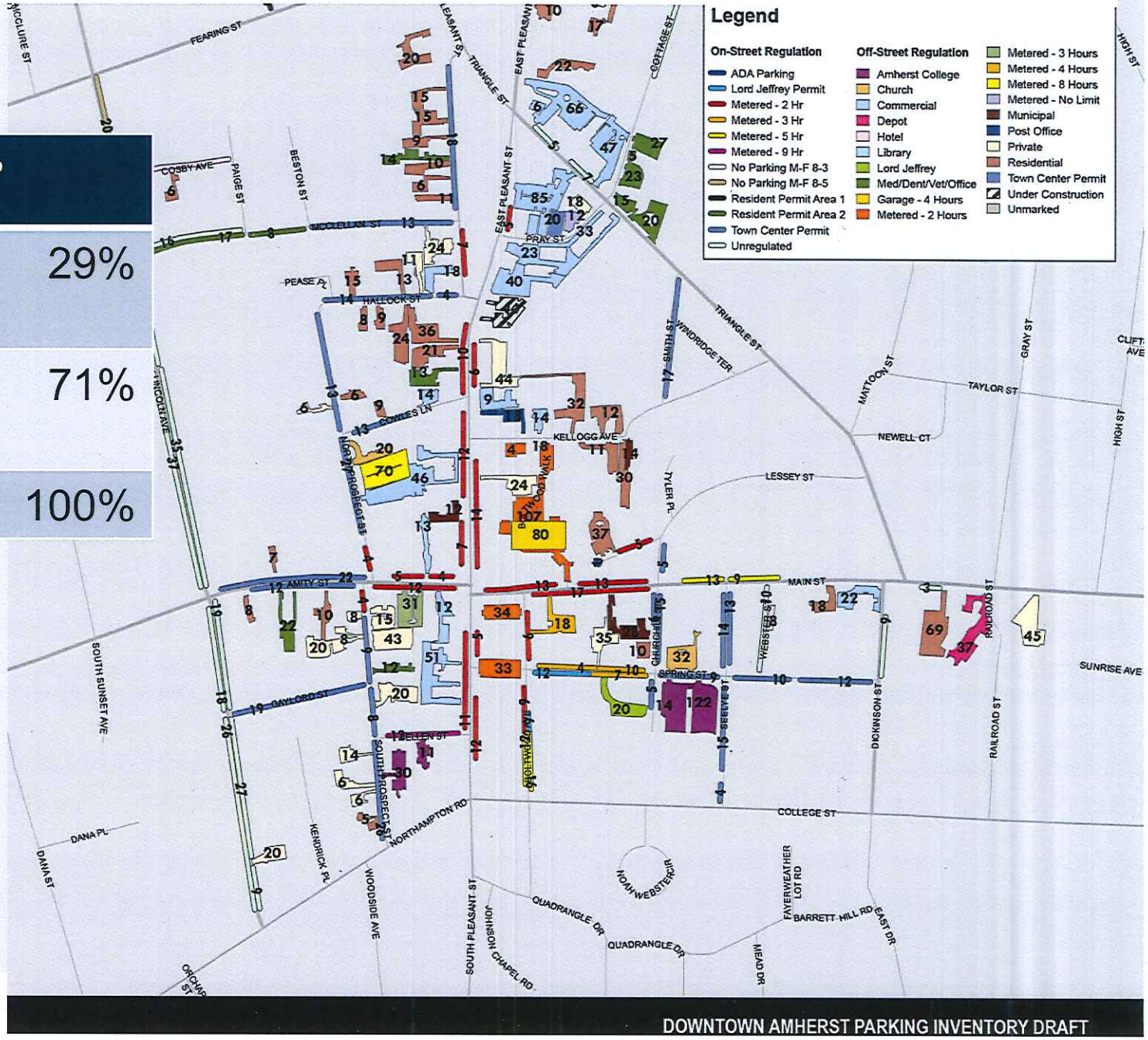
- Top Community priorities
  1. Explore new parking facility
  2. Improve signage for public lots
  3. Simpler/more predicable payment
  4. Review smart technologies/apps

- Parking Working Group formed


Inventory

Over 3,000 spaces within 10-min walk of Amity Street/Pleasant Street
37 Different Parking Regulations

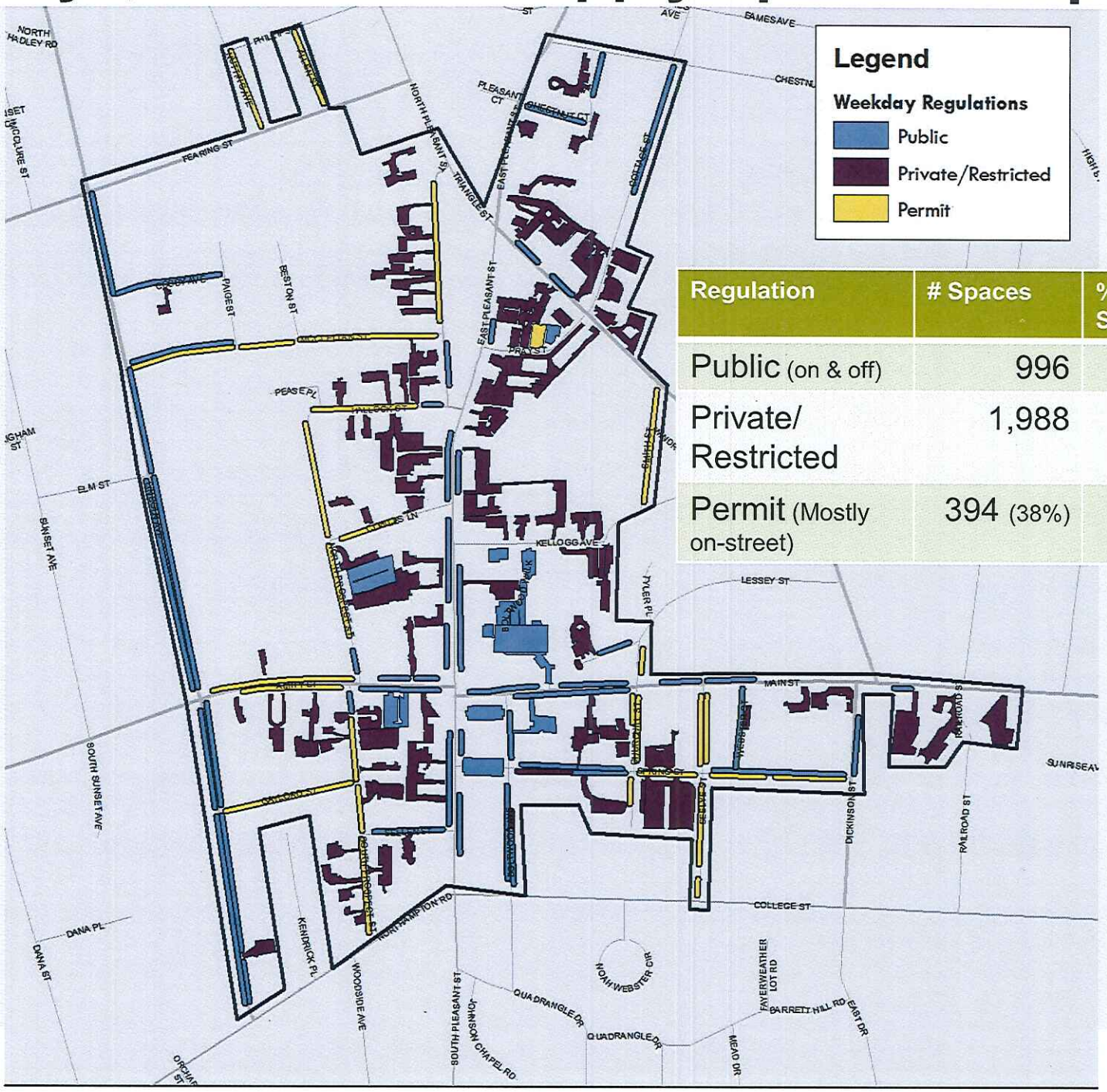
Type	# Spaces	%
On Street	983	29%
Off Street	2,395	71%
Total	3,378	100%



Weekdays, 30% of this supply open to the public

Most time and permit regulations are only weekdays until 6 p.m.

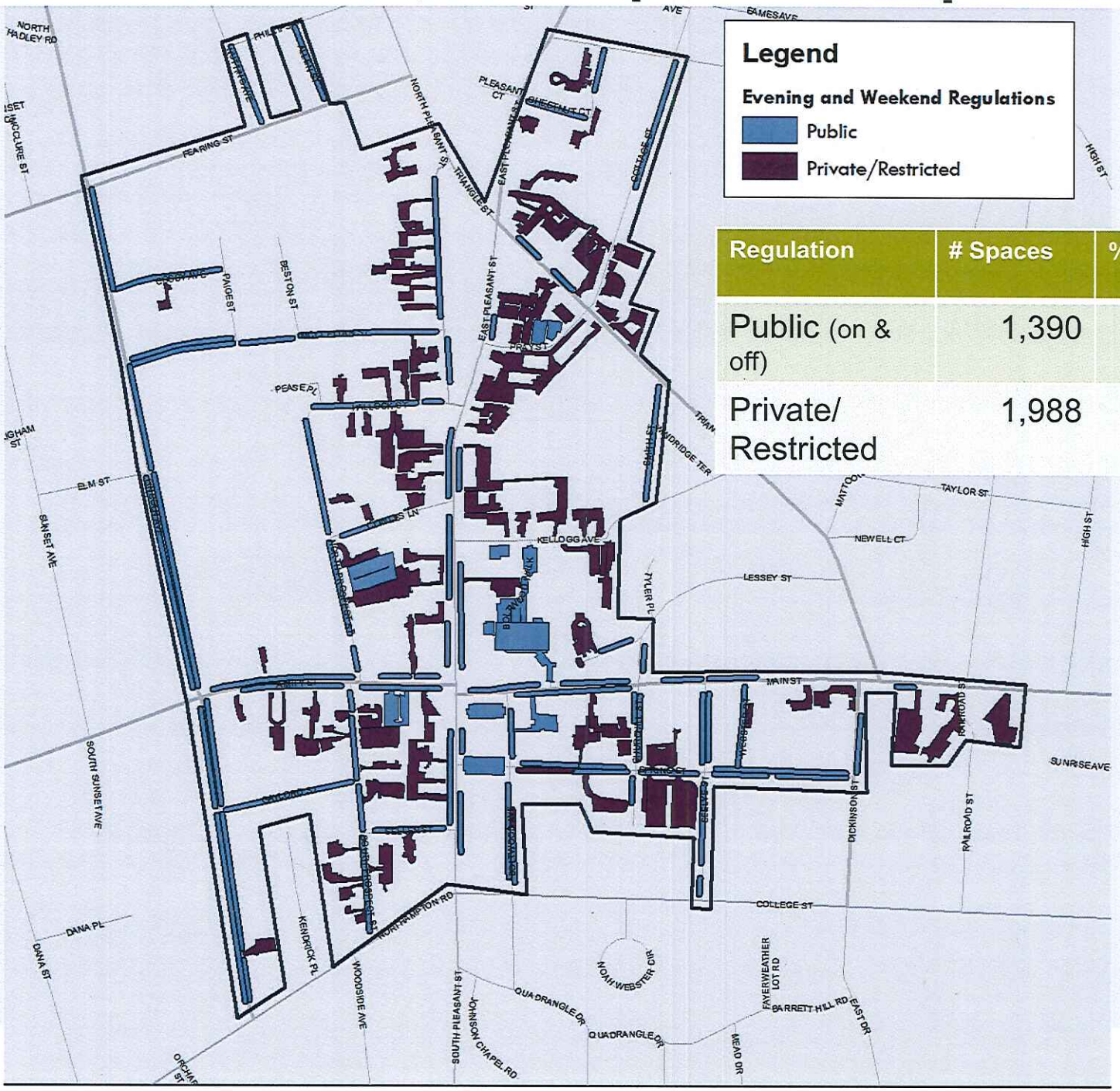
Permit restrictions began in 1999



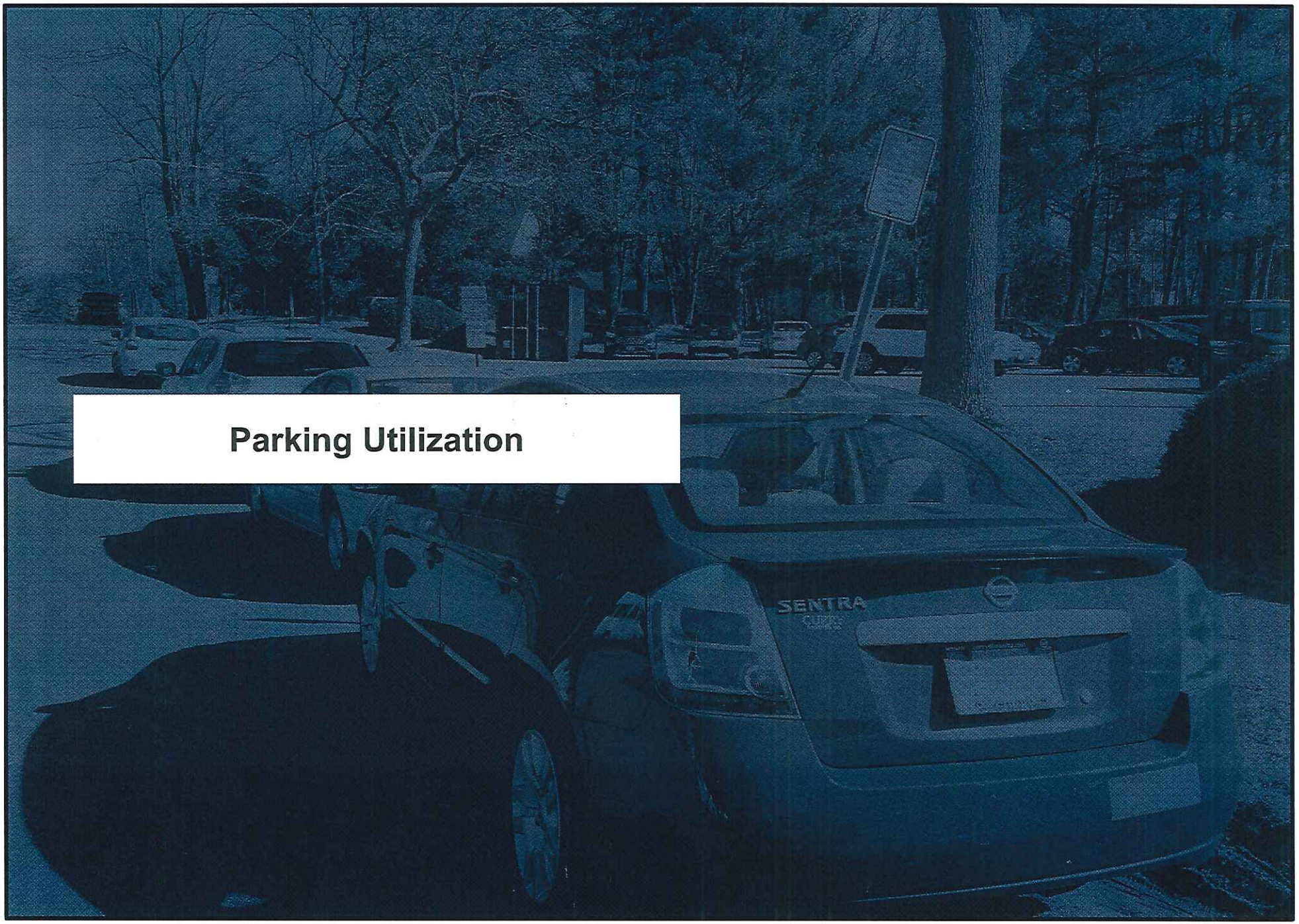
Regulation	# Spaces	% of Total Supply
Public (on & off)	996	30%
Private/ Restricted	1,988	58%
Permit (Mostly on-street)	394 (38%)	12%

On the weekend, 41% open to the public

Most time and permit regulations are only weekdays until 6 p.m.

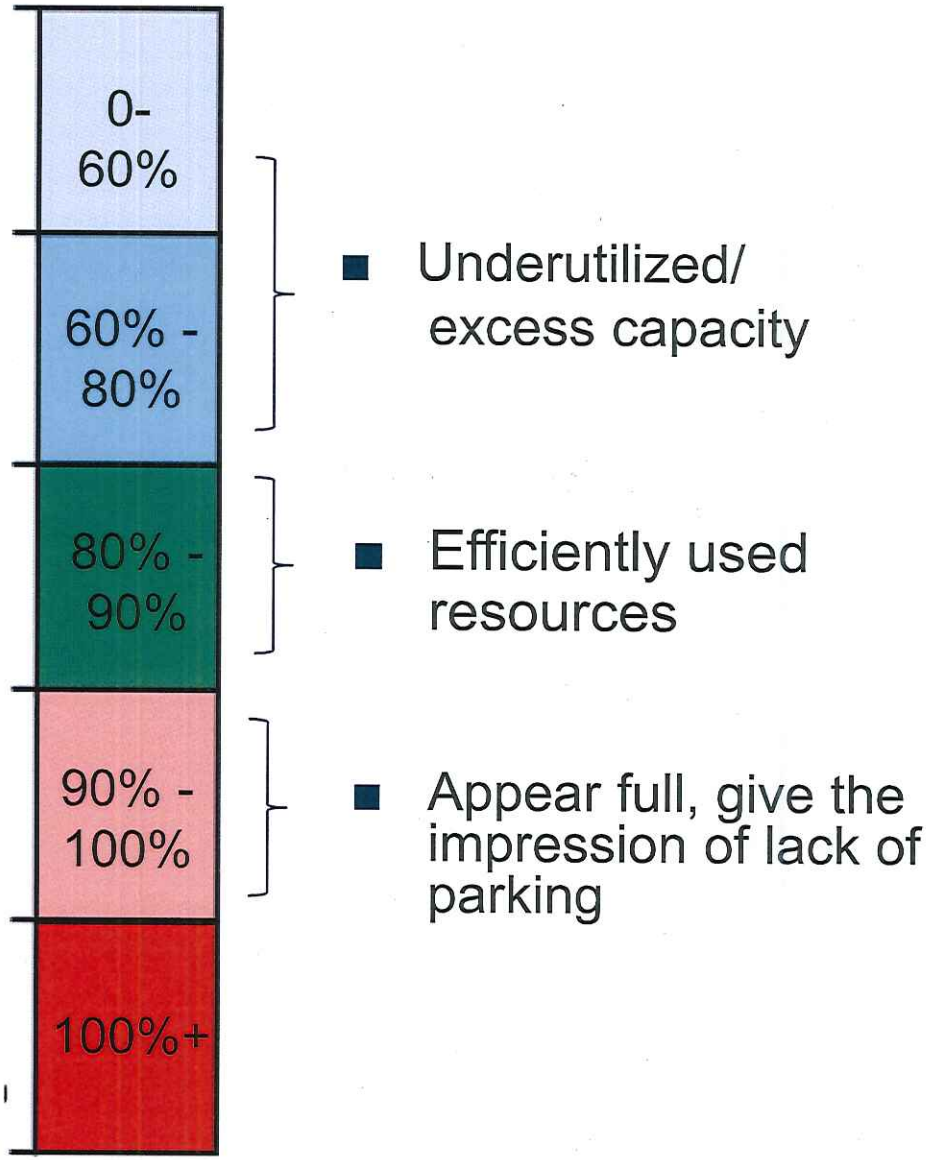


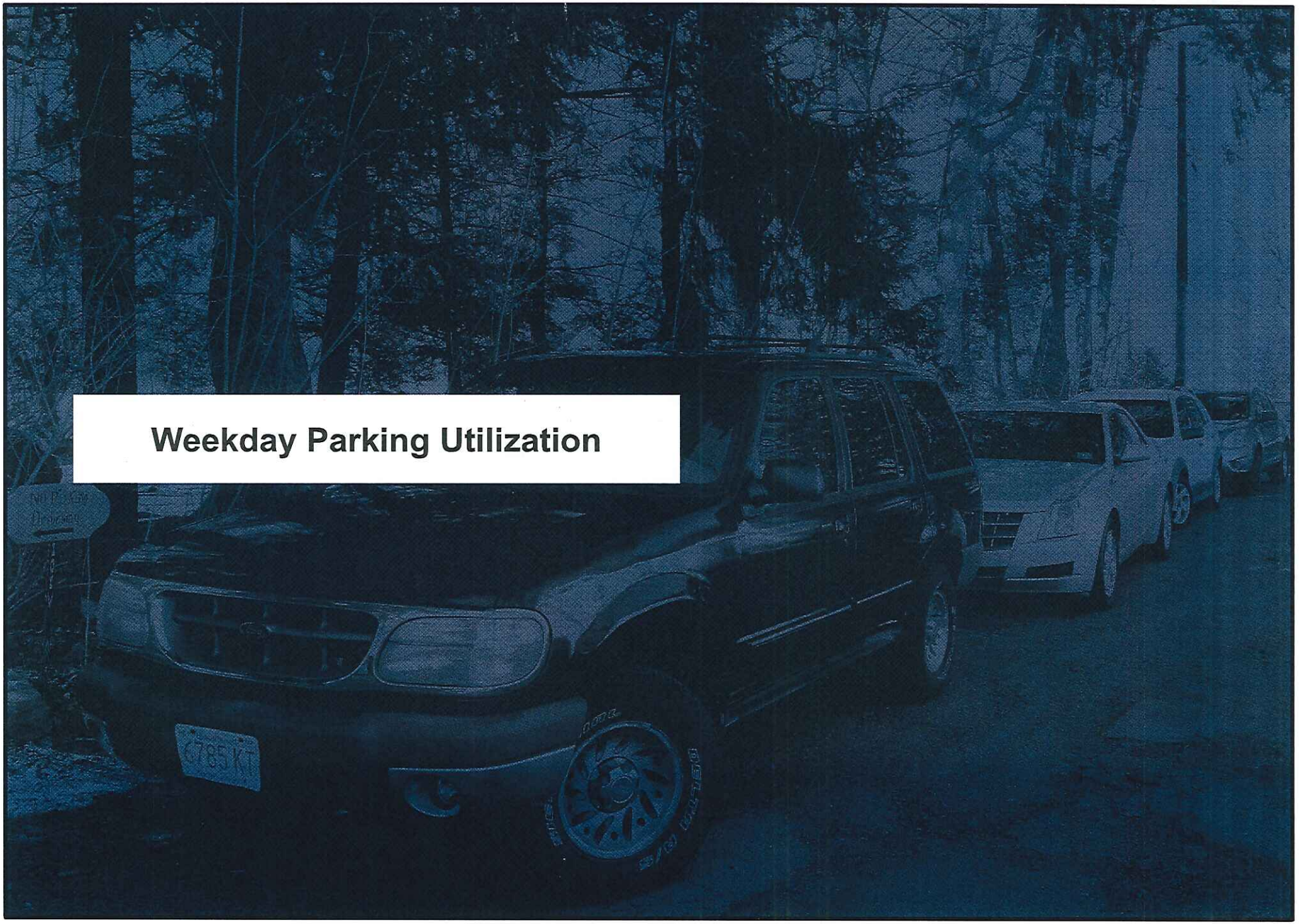
Regulation	# Spaces	%
Public (on & off)	1,390	41%
Private/ Restricted	1,988	59%

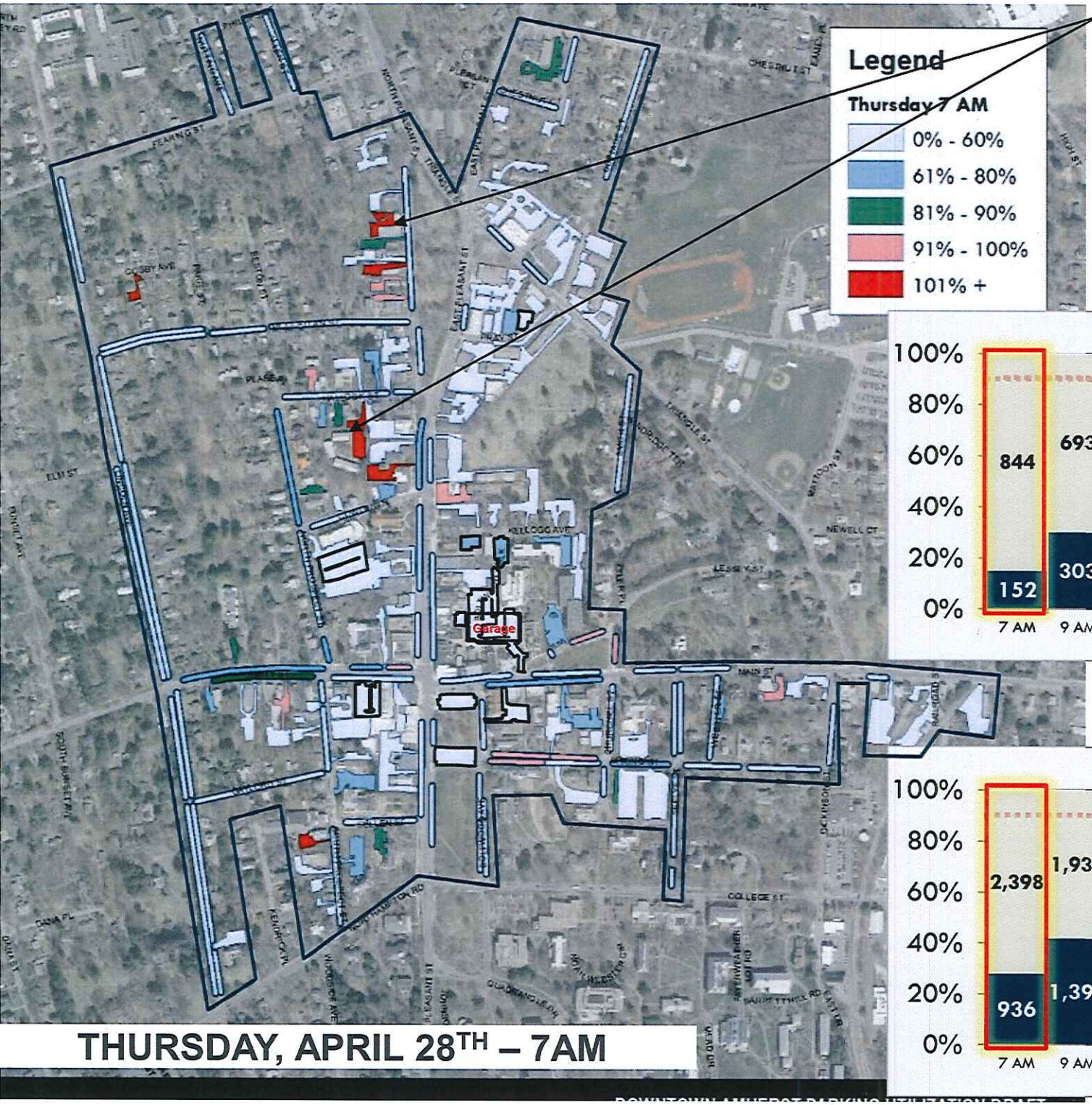

Parking Utilization
SENTRA

Parking Utilization

- Saturday April 9
  - 9am – 9pm
- Saturday April 23 (event)
  - 9am – 11am
- Thursday April 28
  - 7am – 7pm

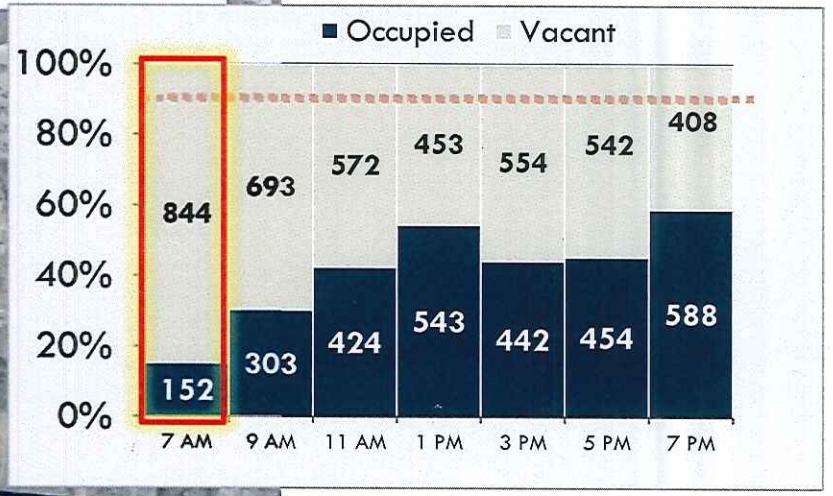



Weekday Parking Utilization



- **7AM** -Vehicles parked at residences

PUBLIC



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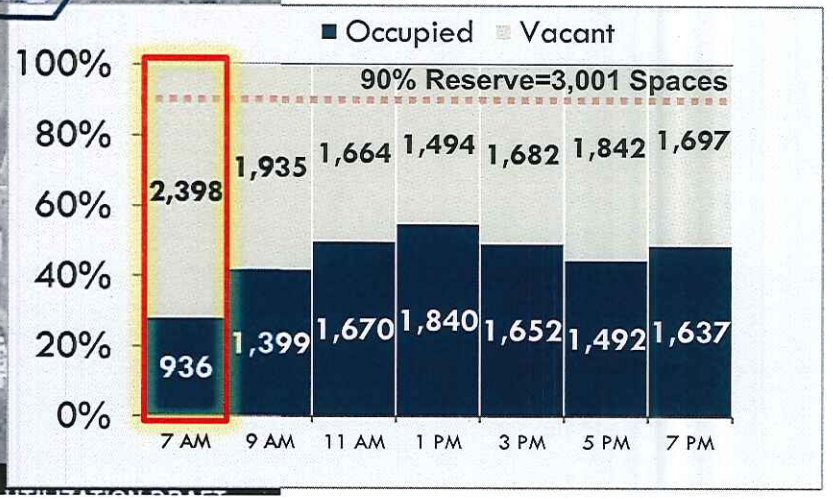
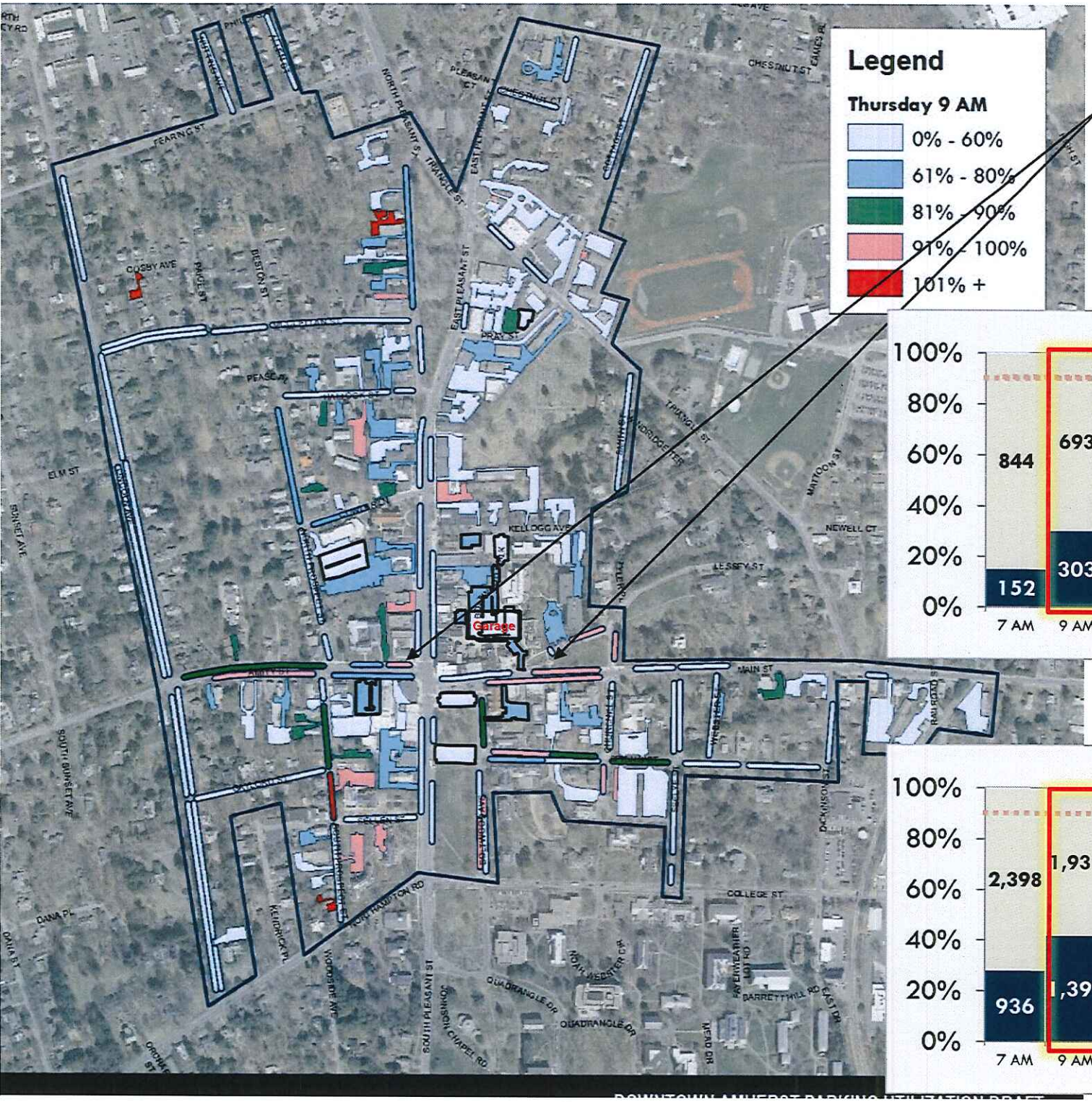
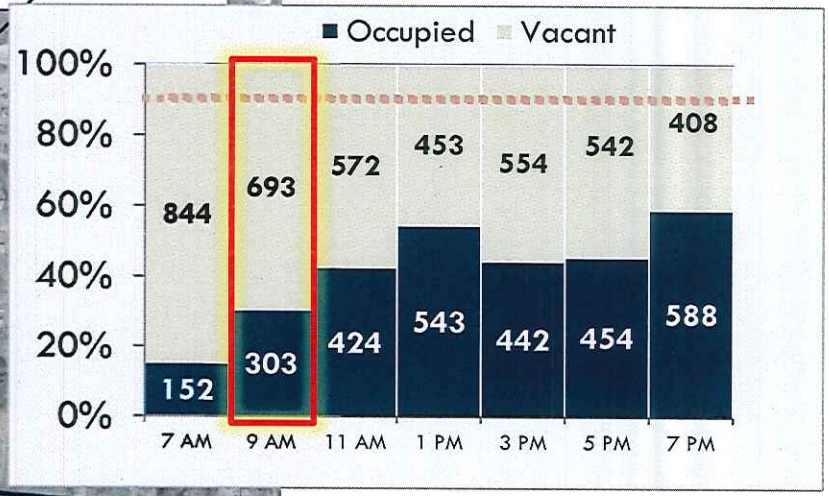




- **7AM** -Vehicles parked at residences
- **9AM** – core starts to get busy

PUBLIC



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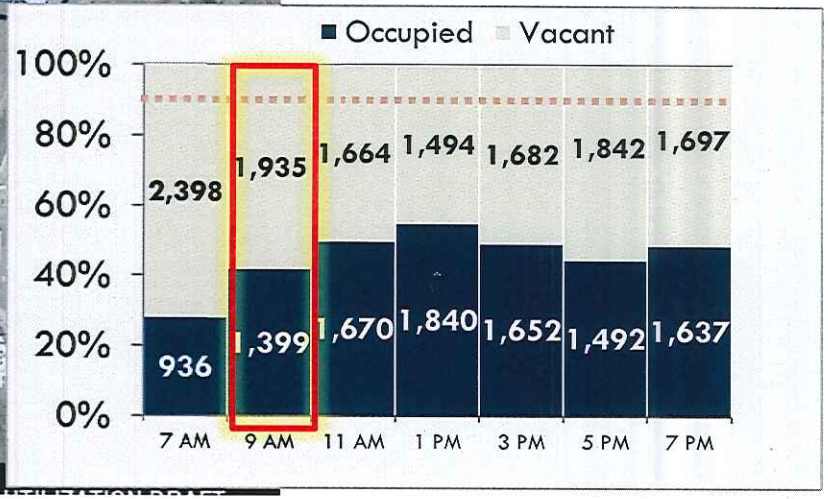
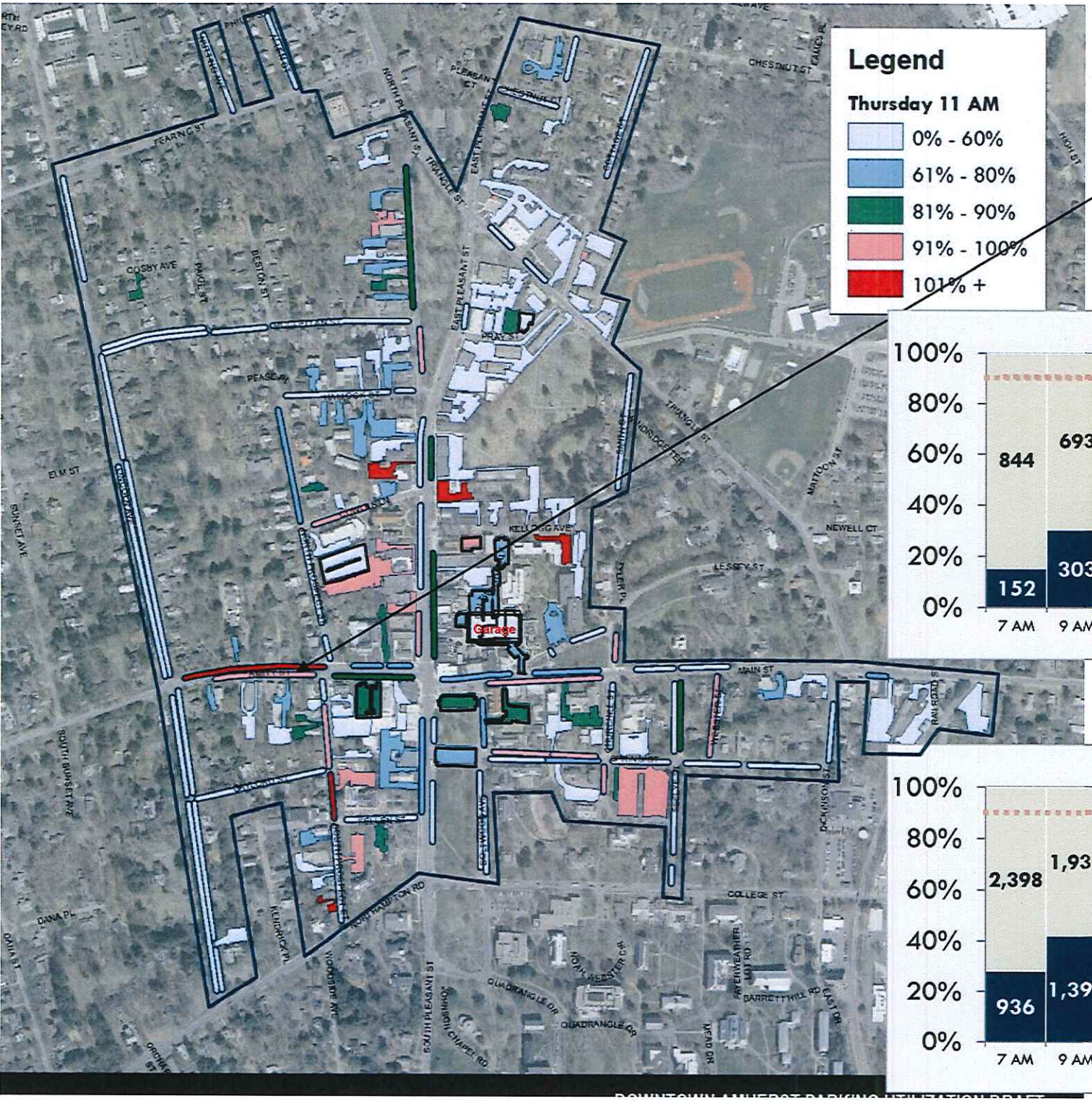
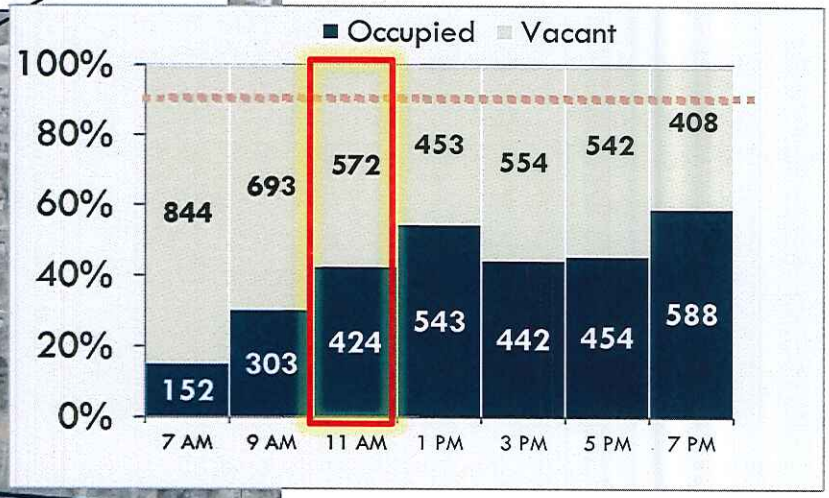




- **7AM** -Vehicles parked at residences
- **9AM** – core starts to get busy
- **11AM** – permit spaces on Amity full

PUBLIC



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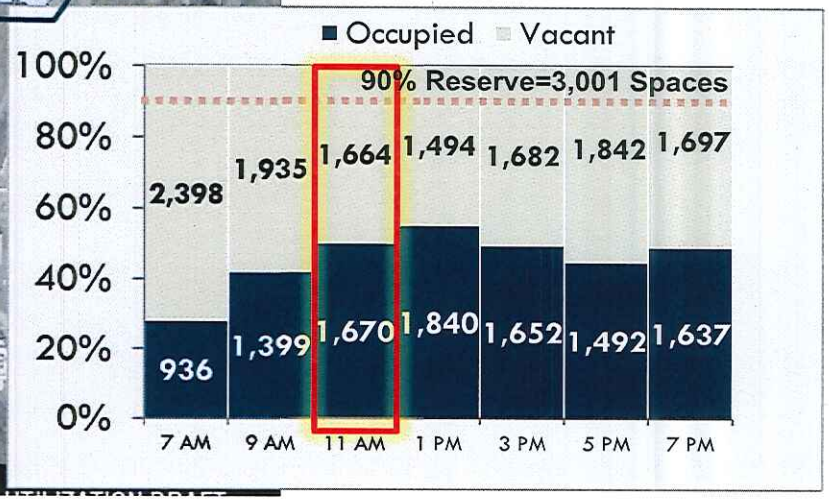
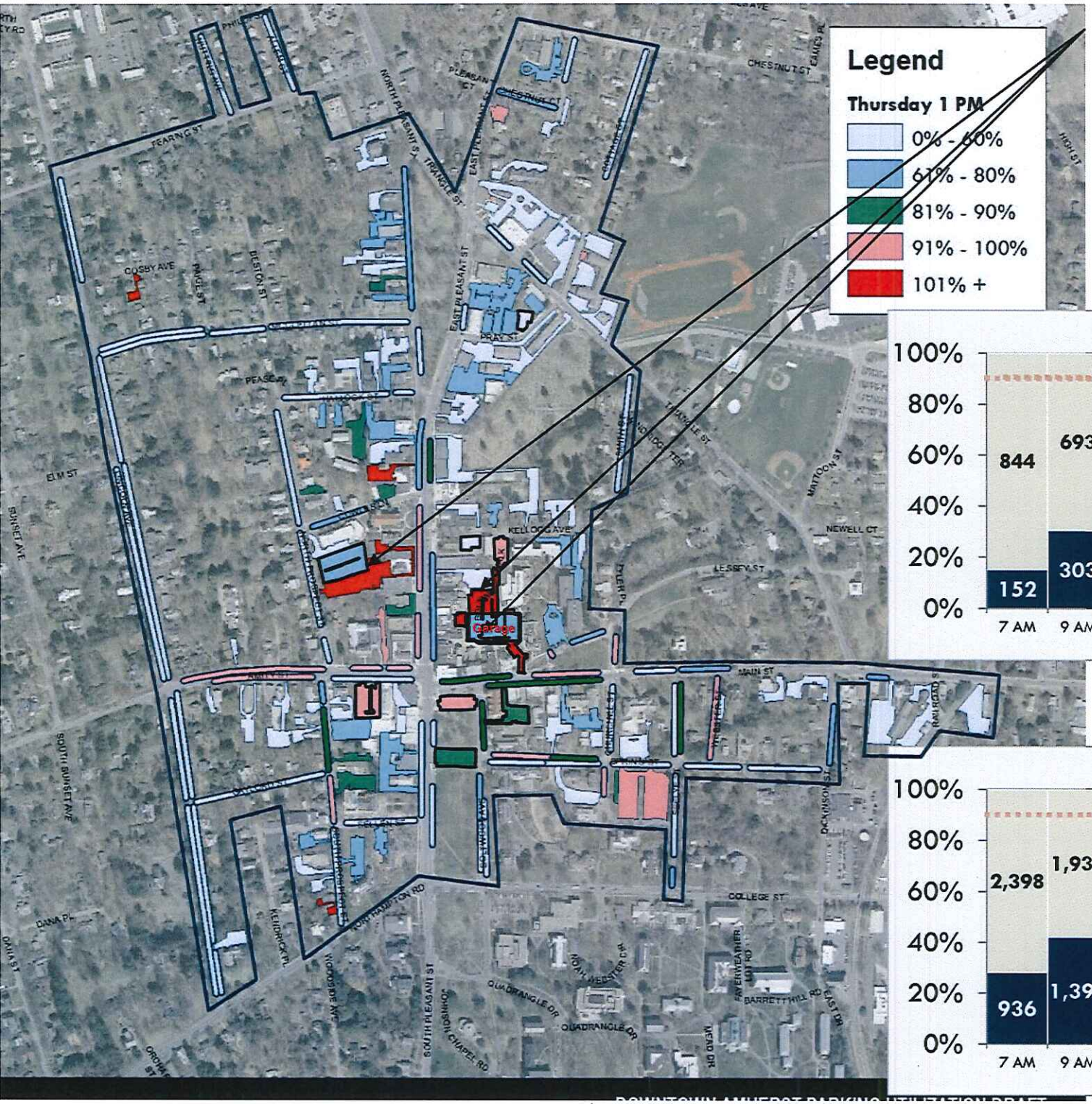


- **Lunchtime** – off-street lots downtown fill, capacity in garage



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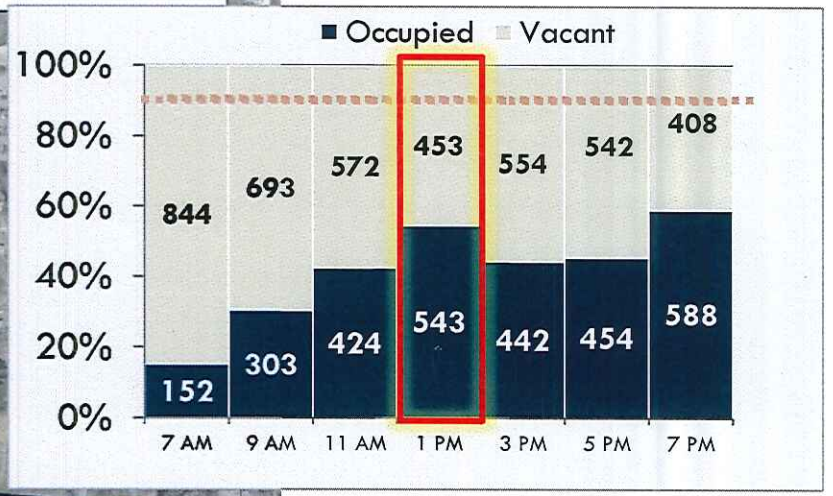

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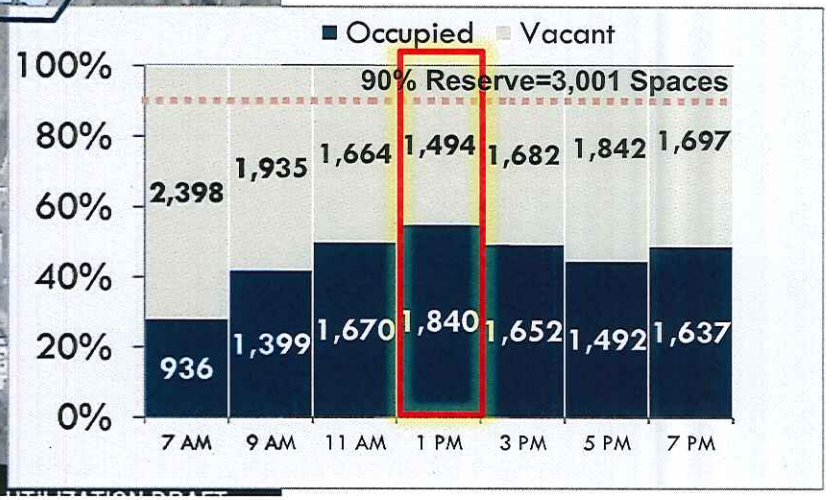
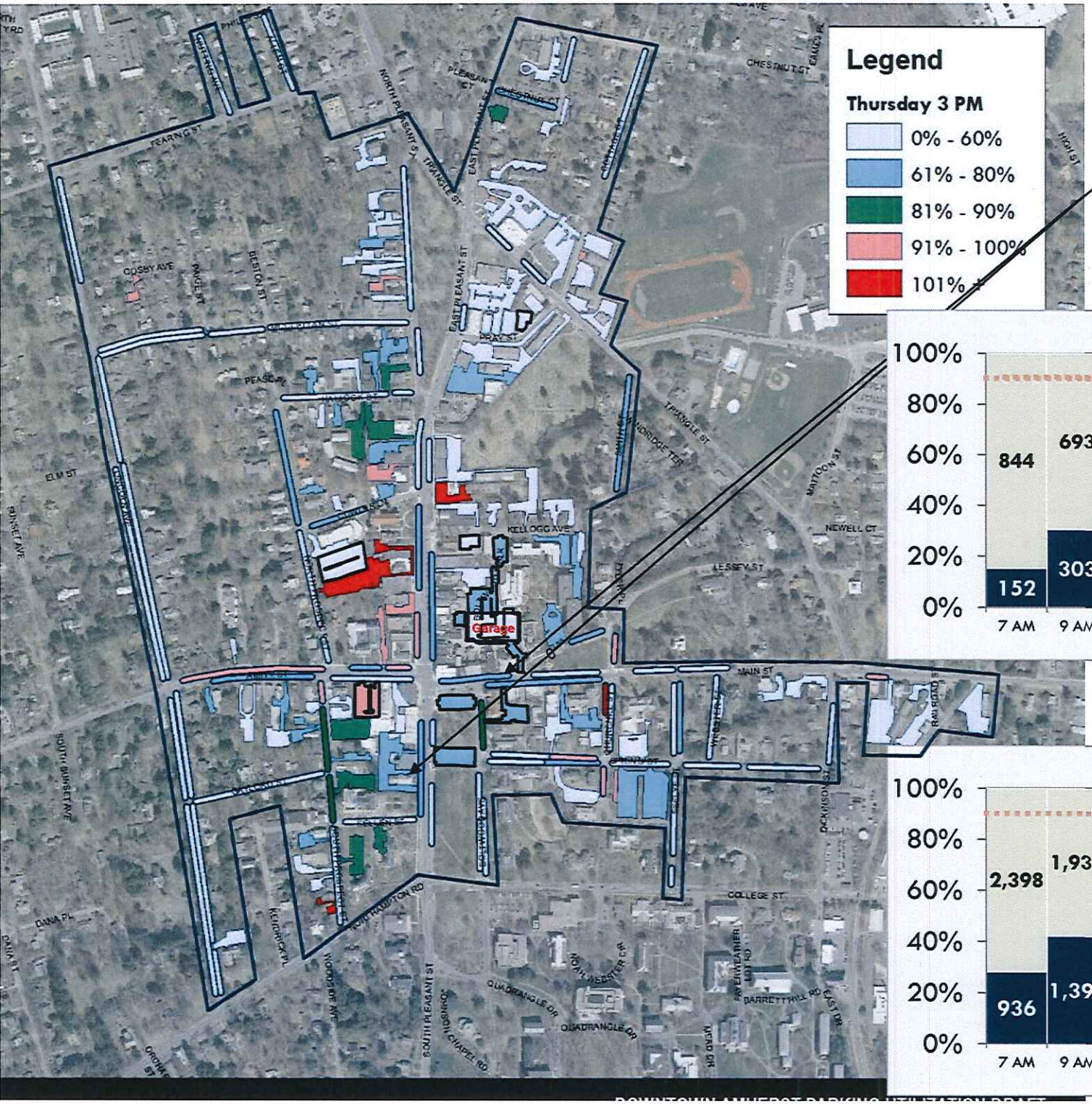
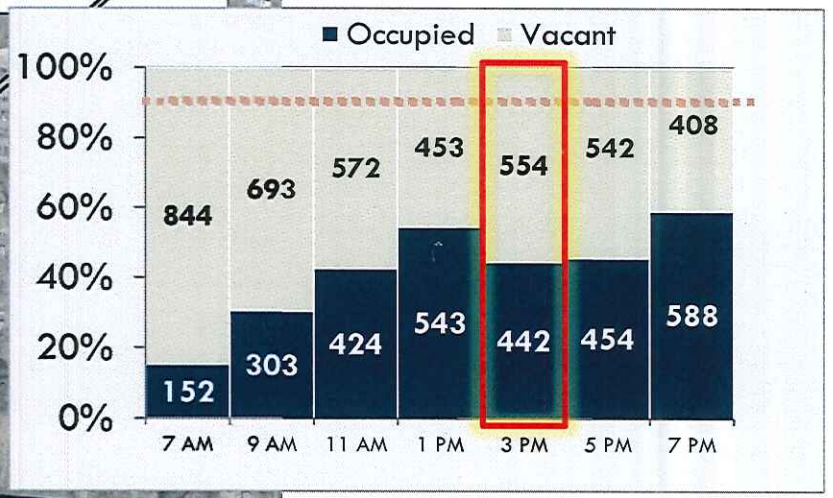




- **Lunchtime** – off-street lots downtown fill, capacity in garage
- **3PM + 5PM** availability on-street in core

PUBLIC



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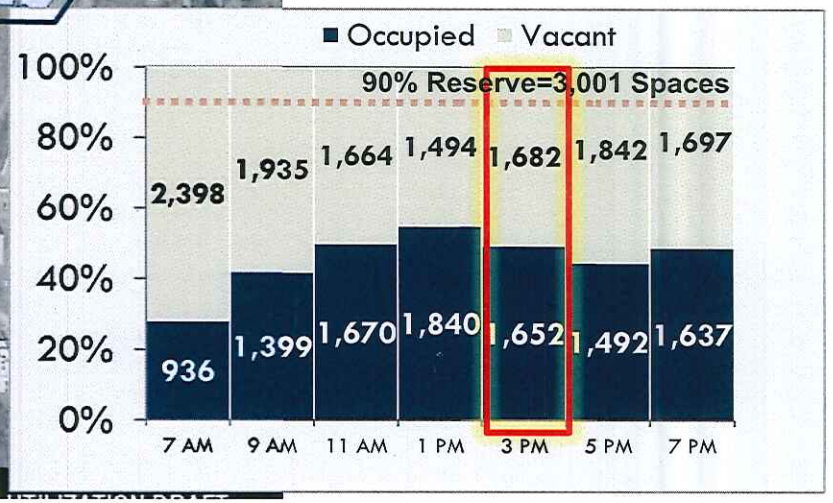
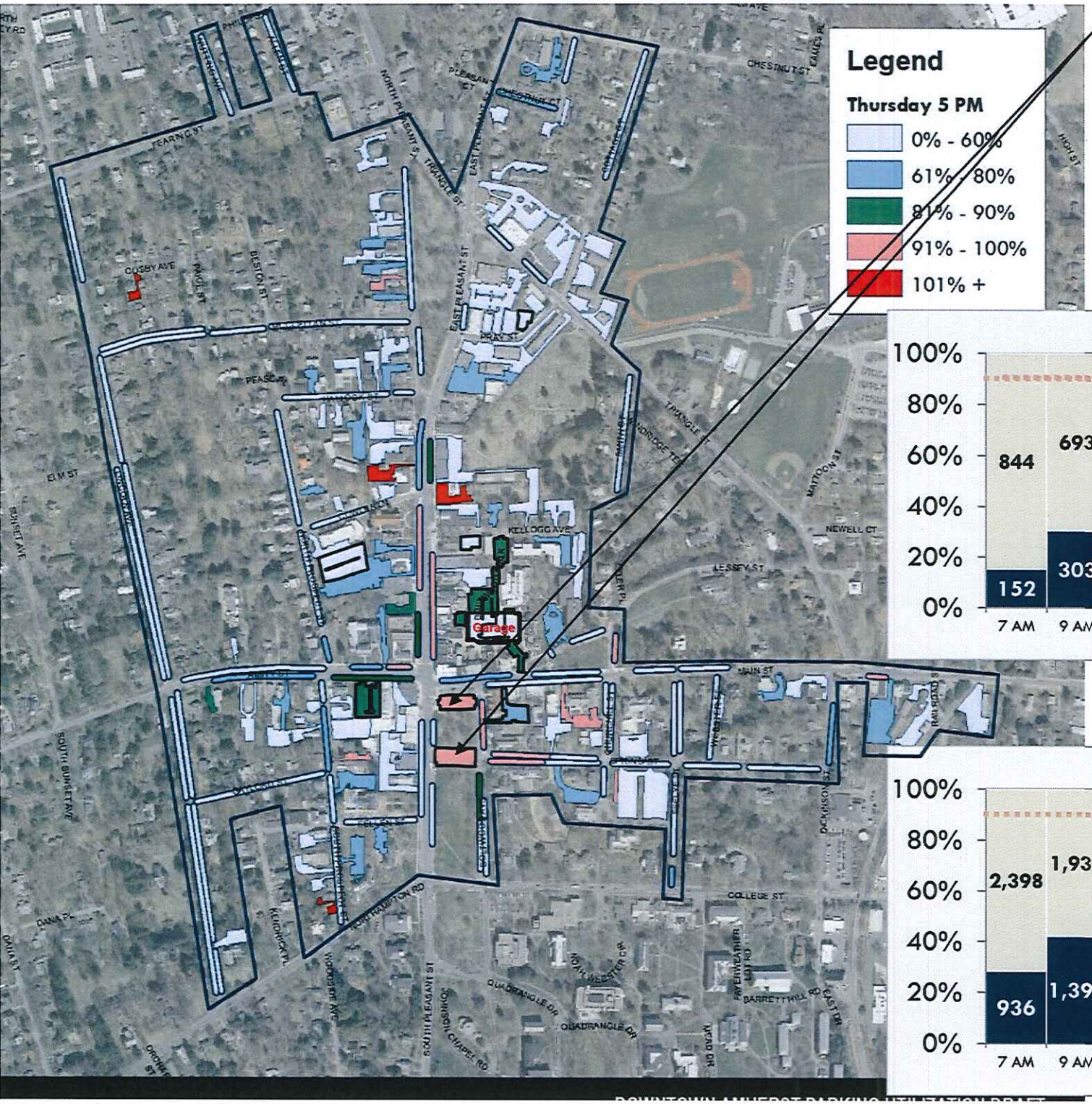
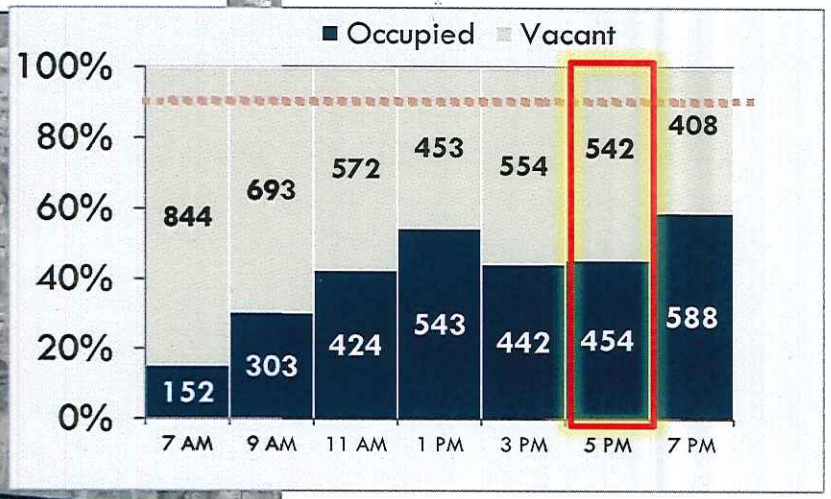




- **5PM –** City hall lots fill

PUBLIC



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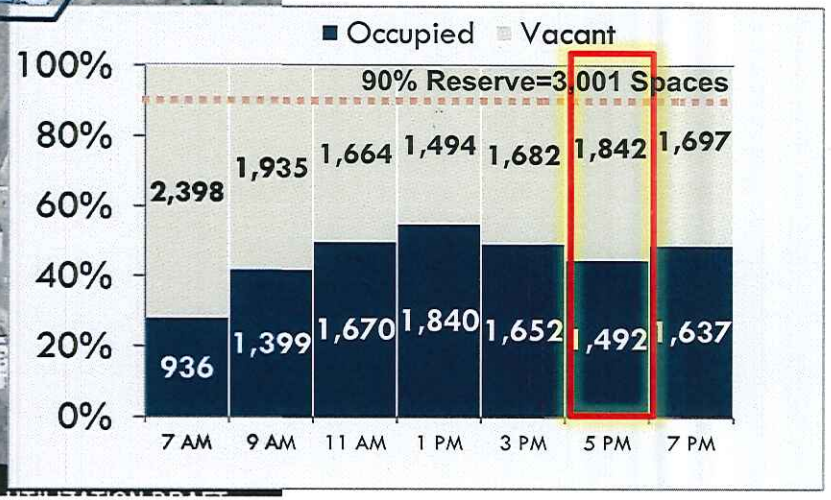

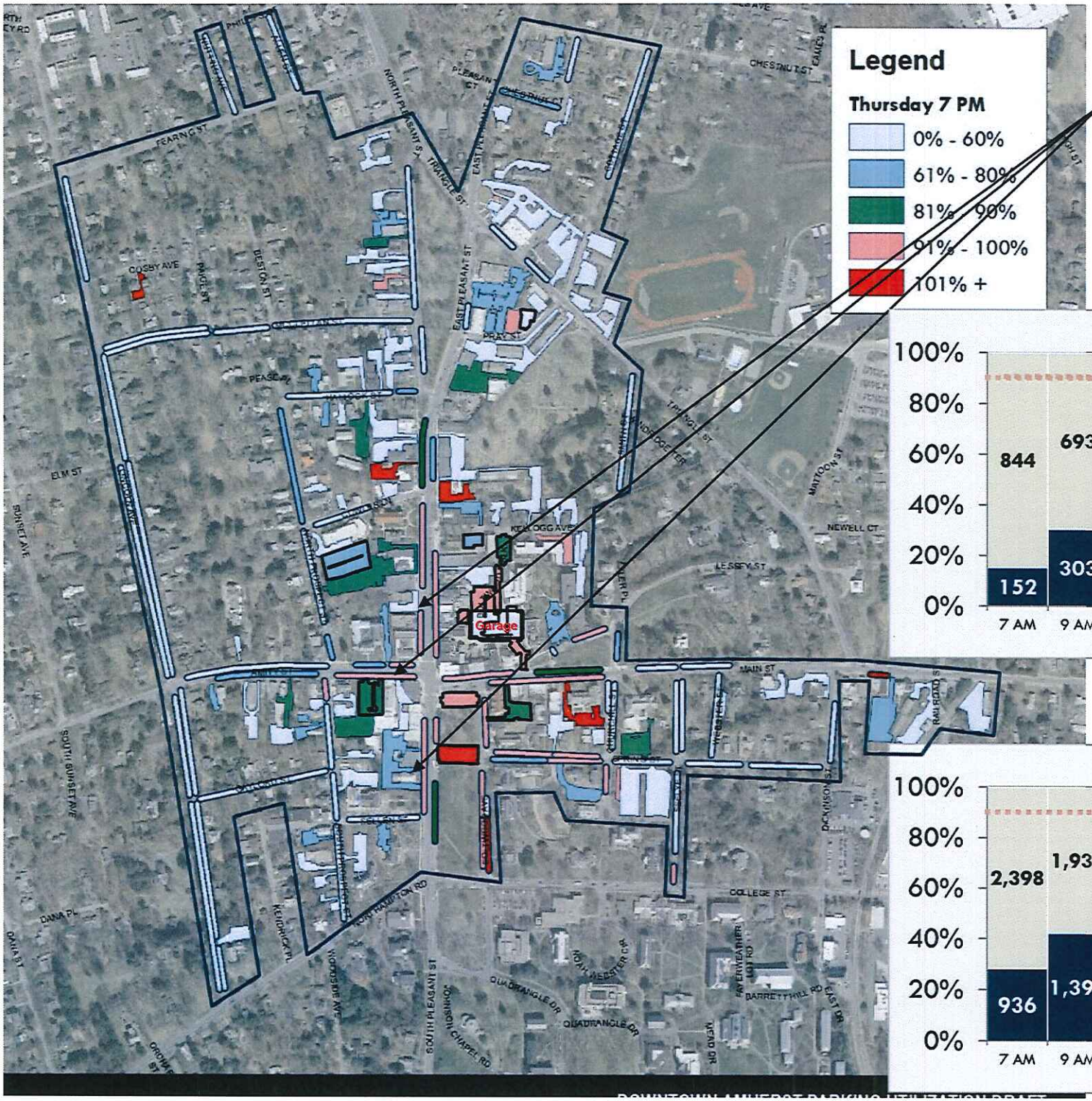

- **5PM** – City hall lots fill
- **7PM** – On-street regs end, streets flood

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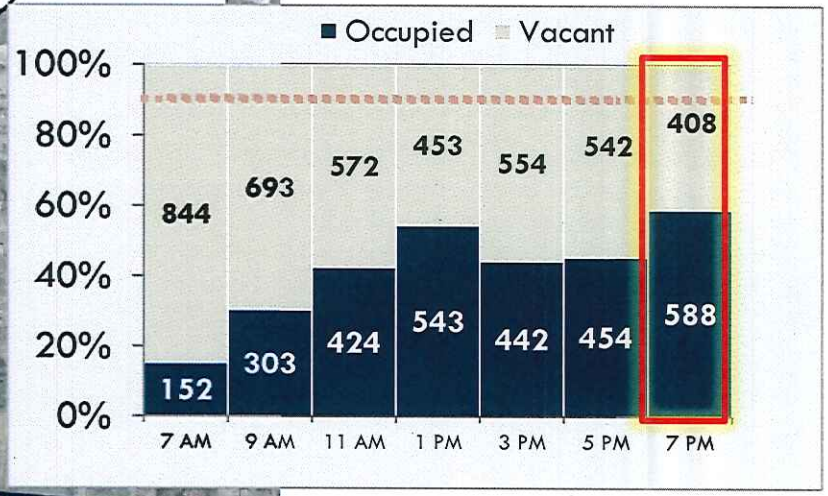

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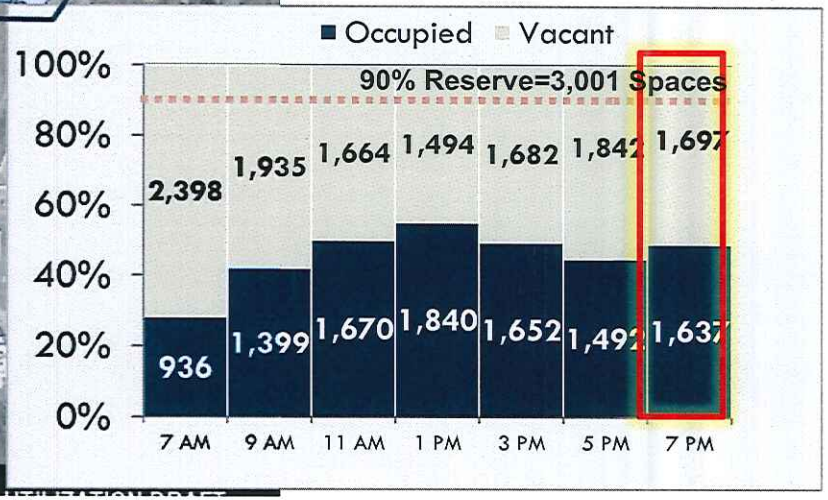
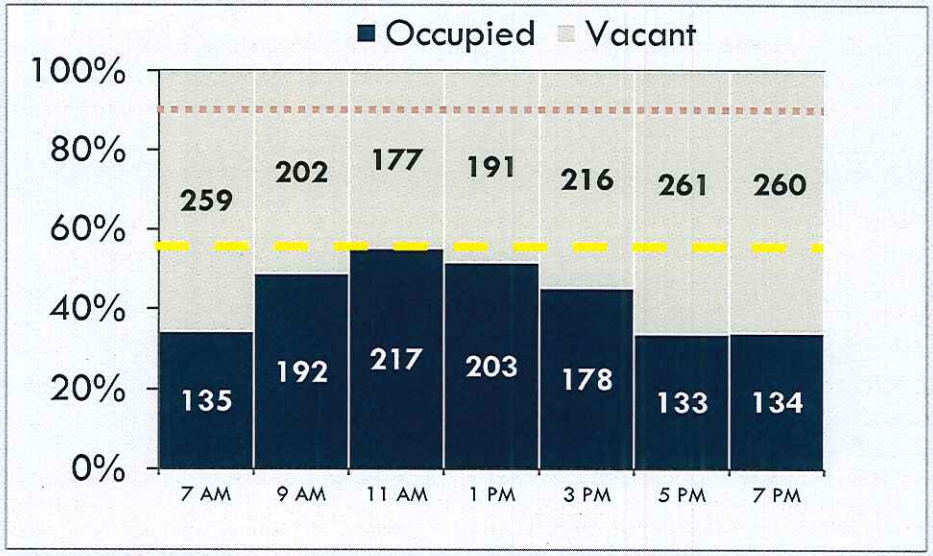
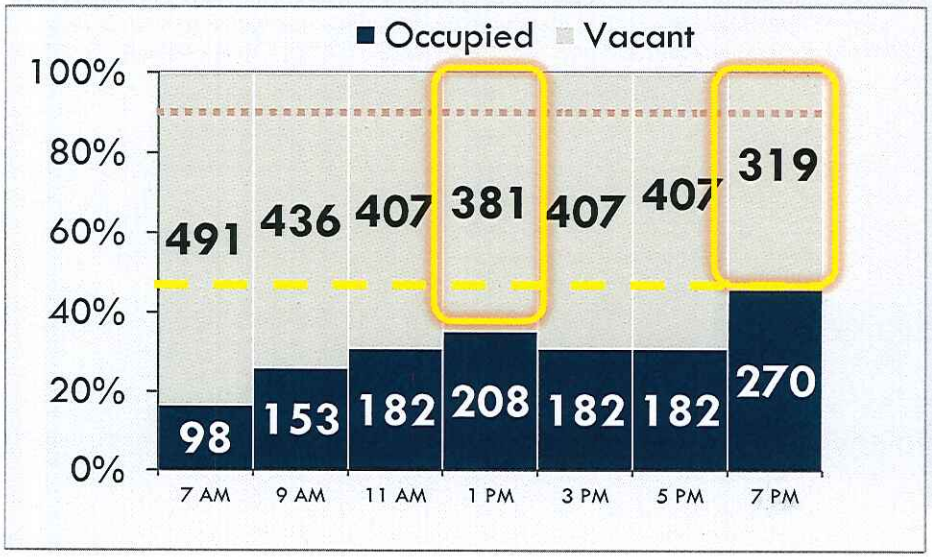


THURSDAY, APRIL 28TH

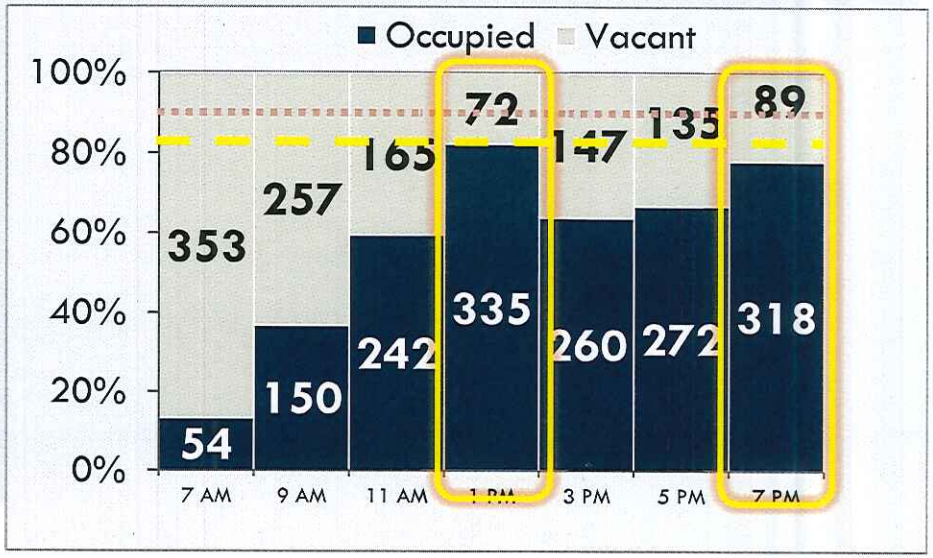
ON-STREET (PERMIT, ETC) (55% full)

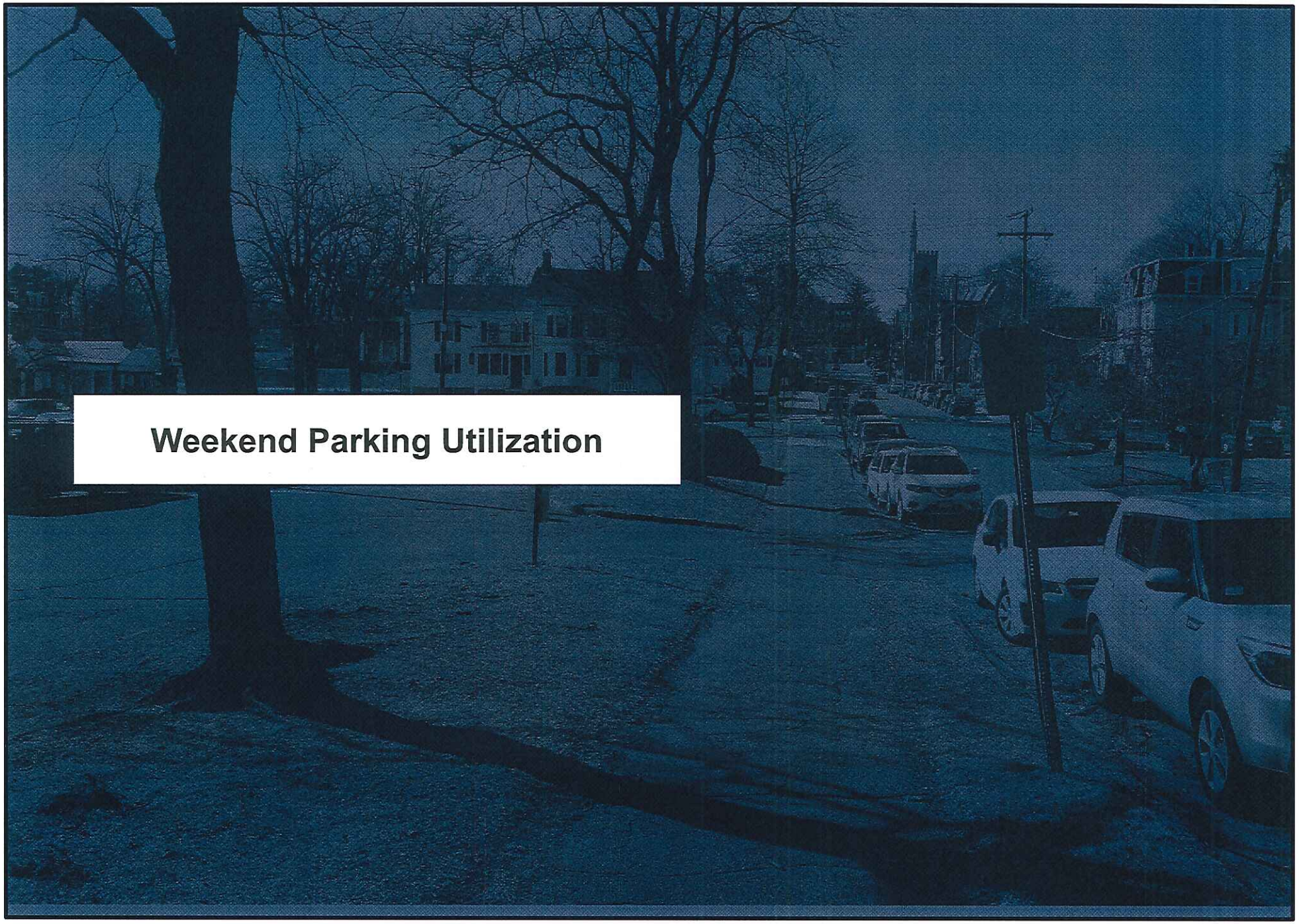


ON-STREET (METERS & UNREGULATED) (46% full)

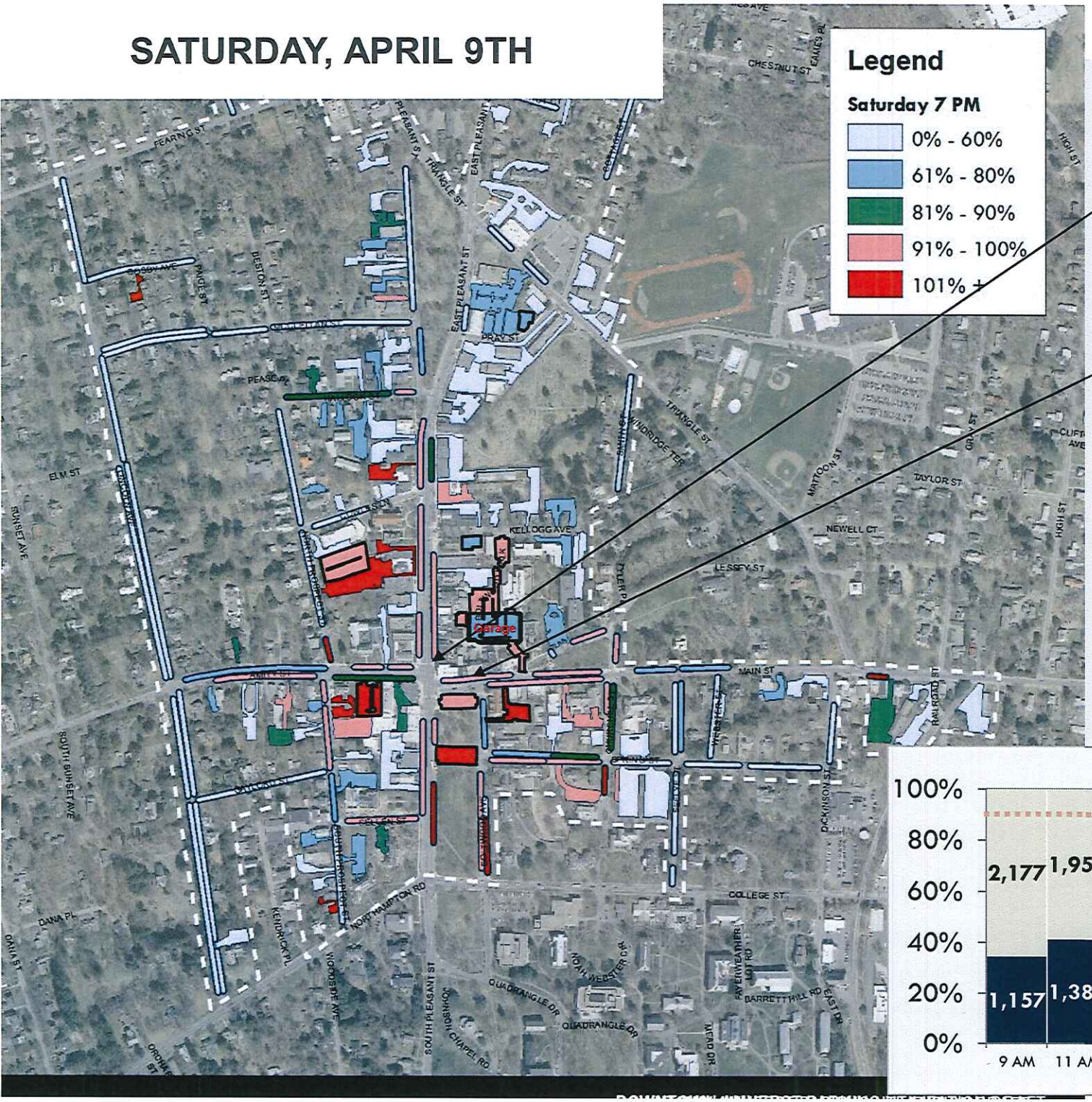


PUBLIC OFF-STREET (82% full)

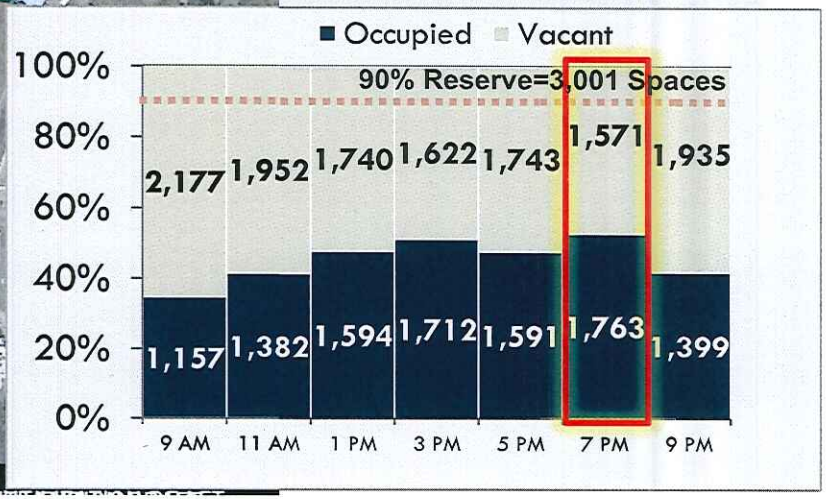



Weekend Parking Utilization

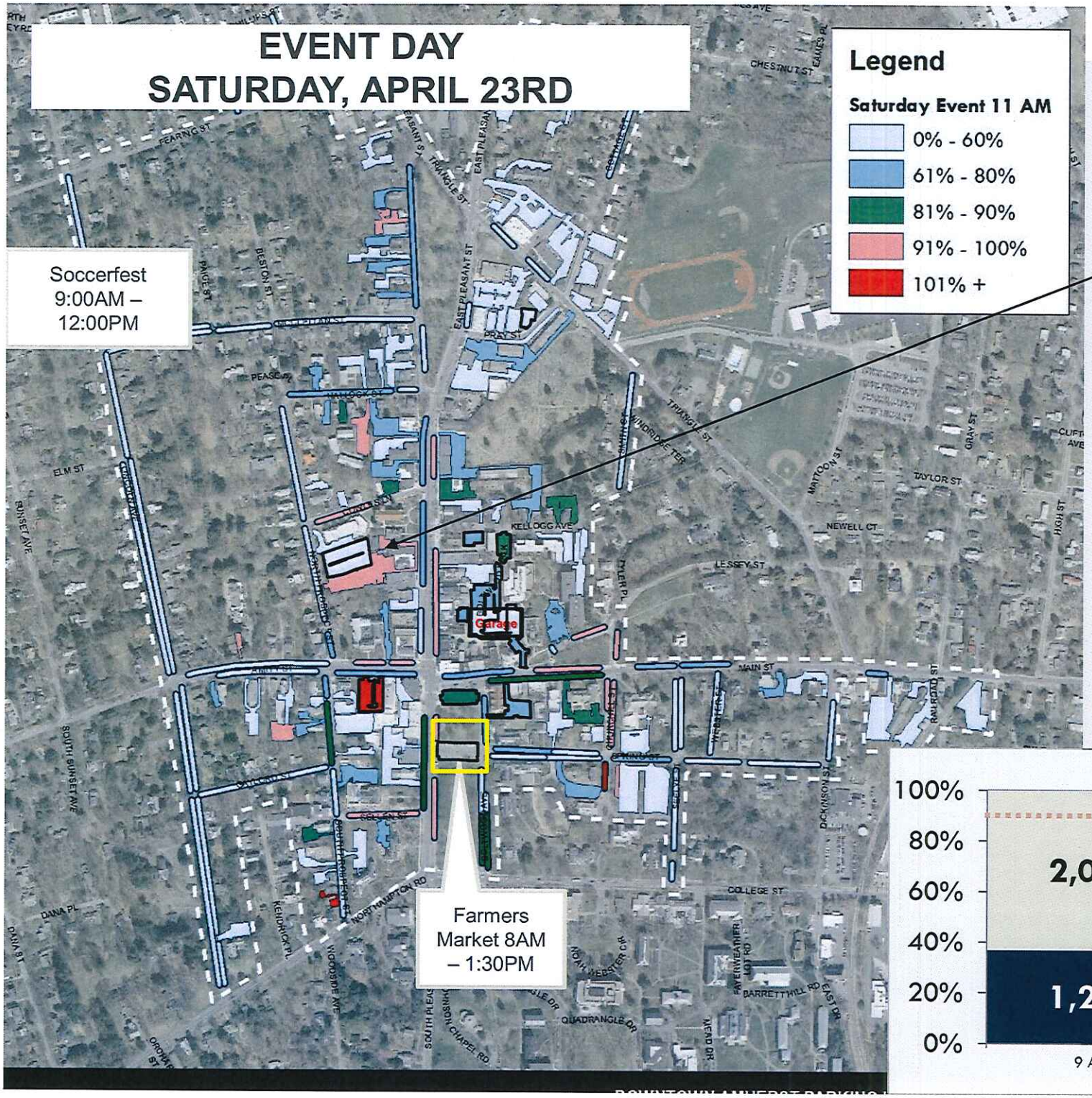
SATURDAY, APRIL 9TH



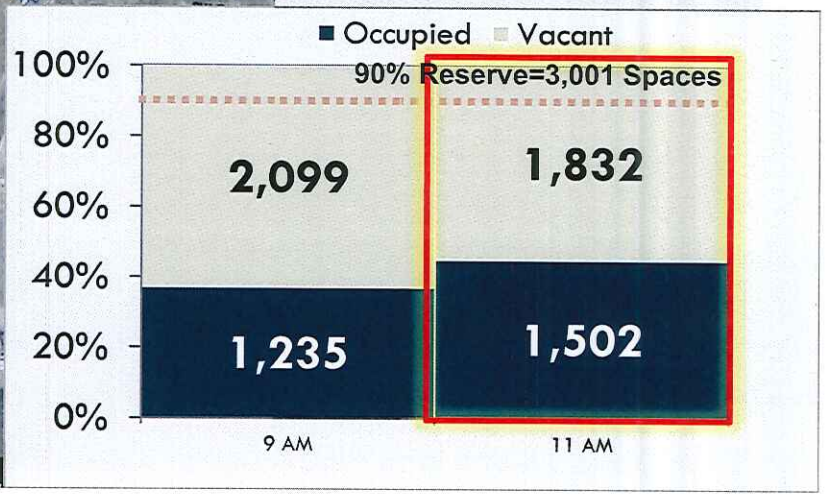
- **7PM (peak) –** Less central areas with capacity.
- Downtown core with high demand though only 50% full overall

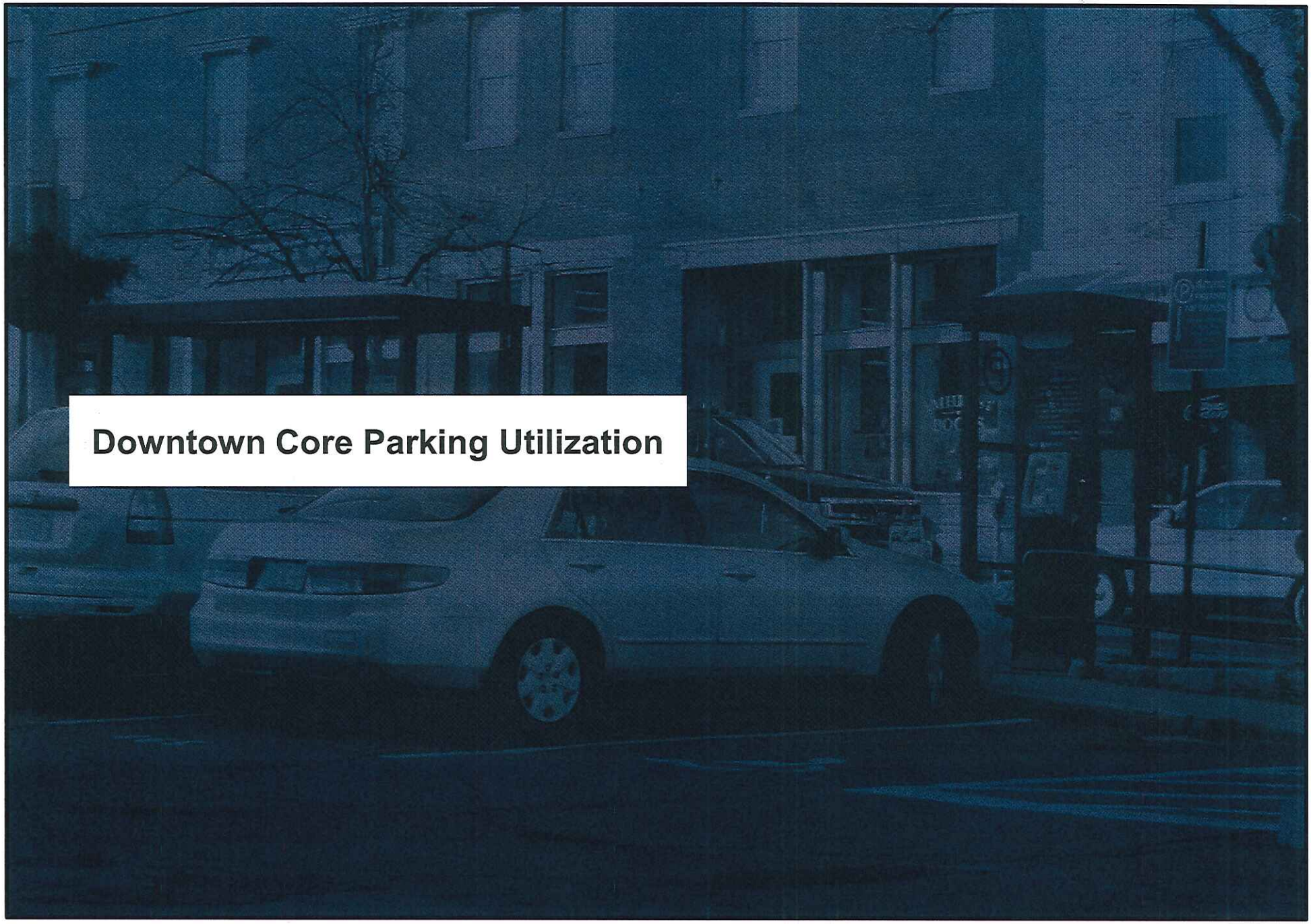


EVENT DAY
SATURDAY, APRIL 23RD

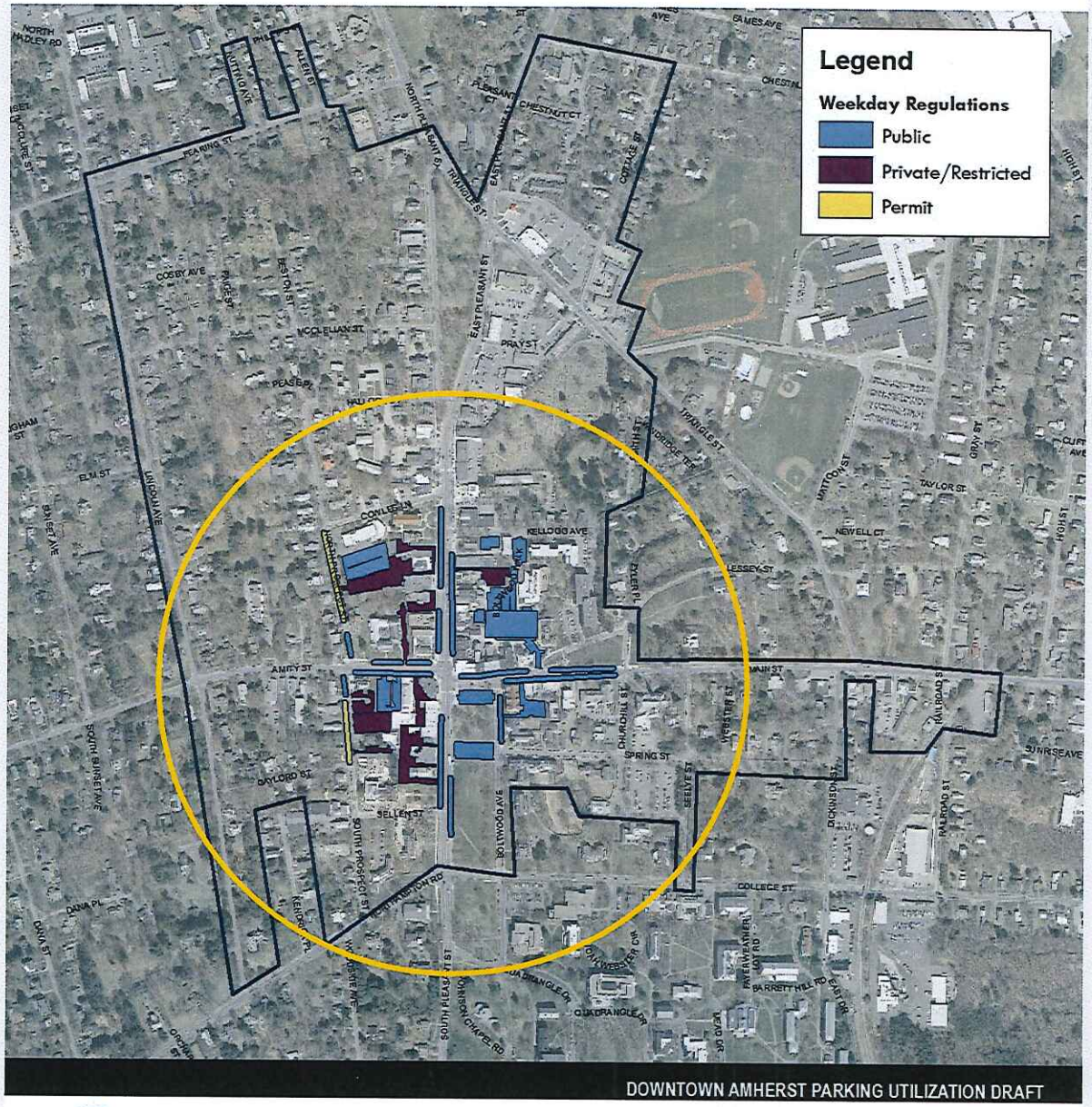


- **9AM** – on and off street availability
- **11AM** – some off street fills in core

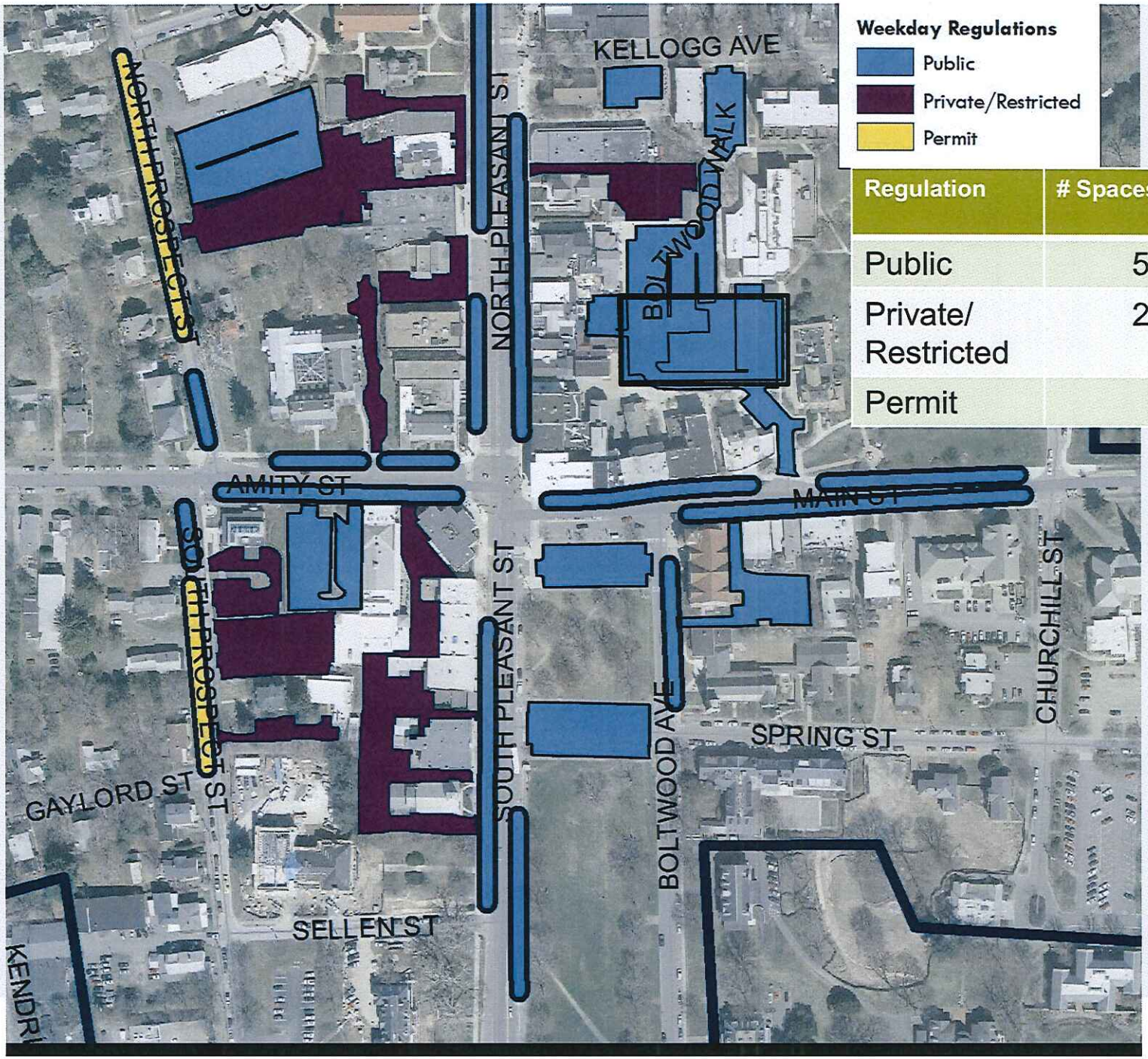



Downtown Core Parking Utilization

The downtown core is less than a 5-minute walk across

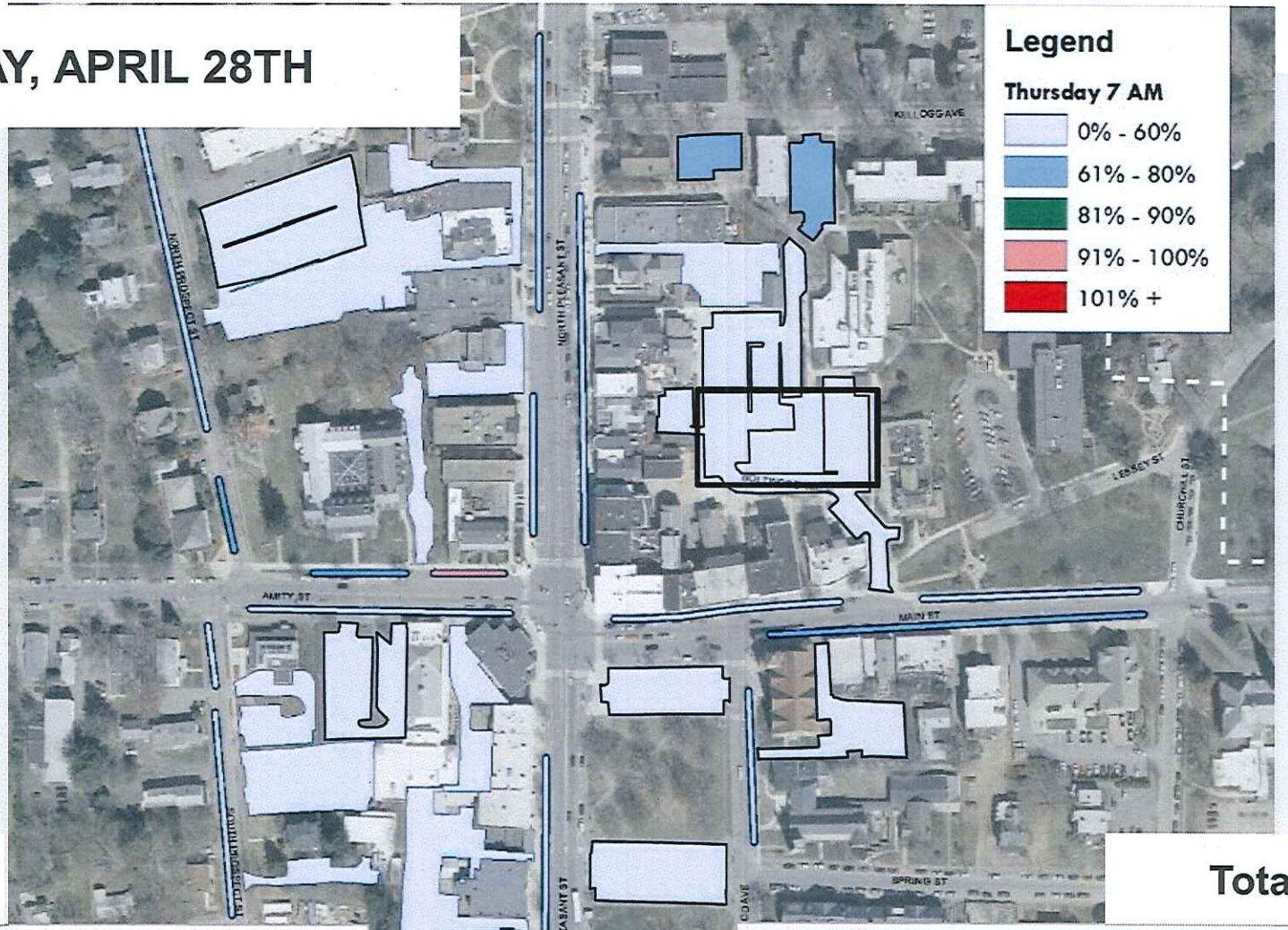


Weekdays, 67% of Core Parking is open to the public

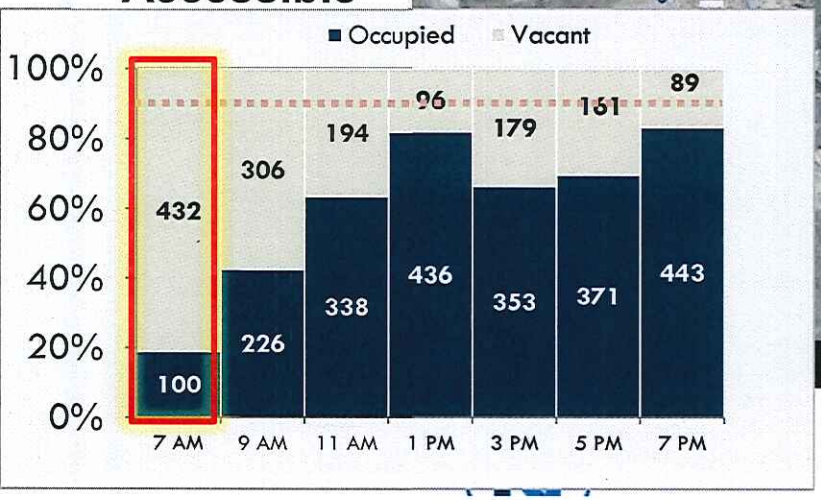


Regulation	# Spaces	%
Public	532	67%
Private/ Restricted	228	29%
Permit	36	5%

THURSDAY, APRIL 28TH



Publicly Accessible



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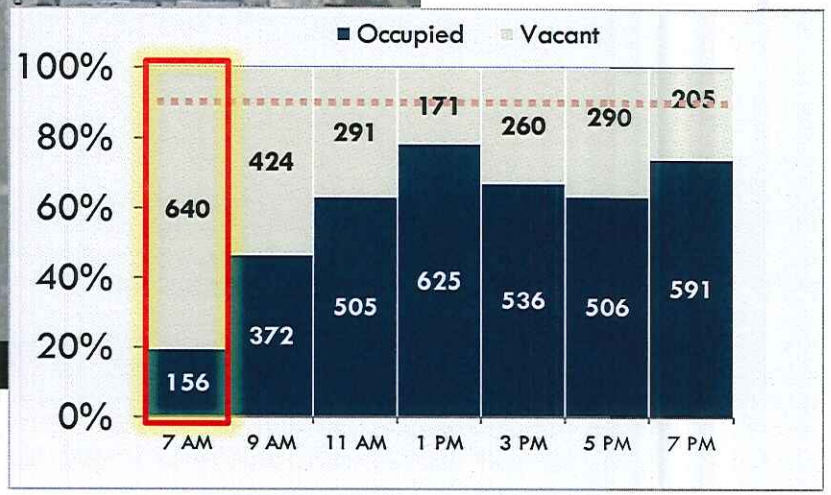
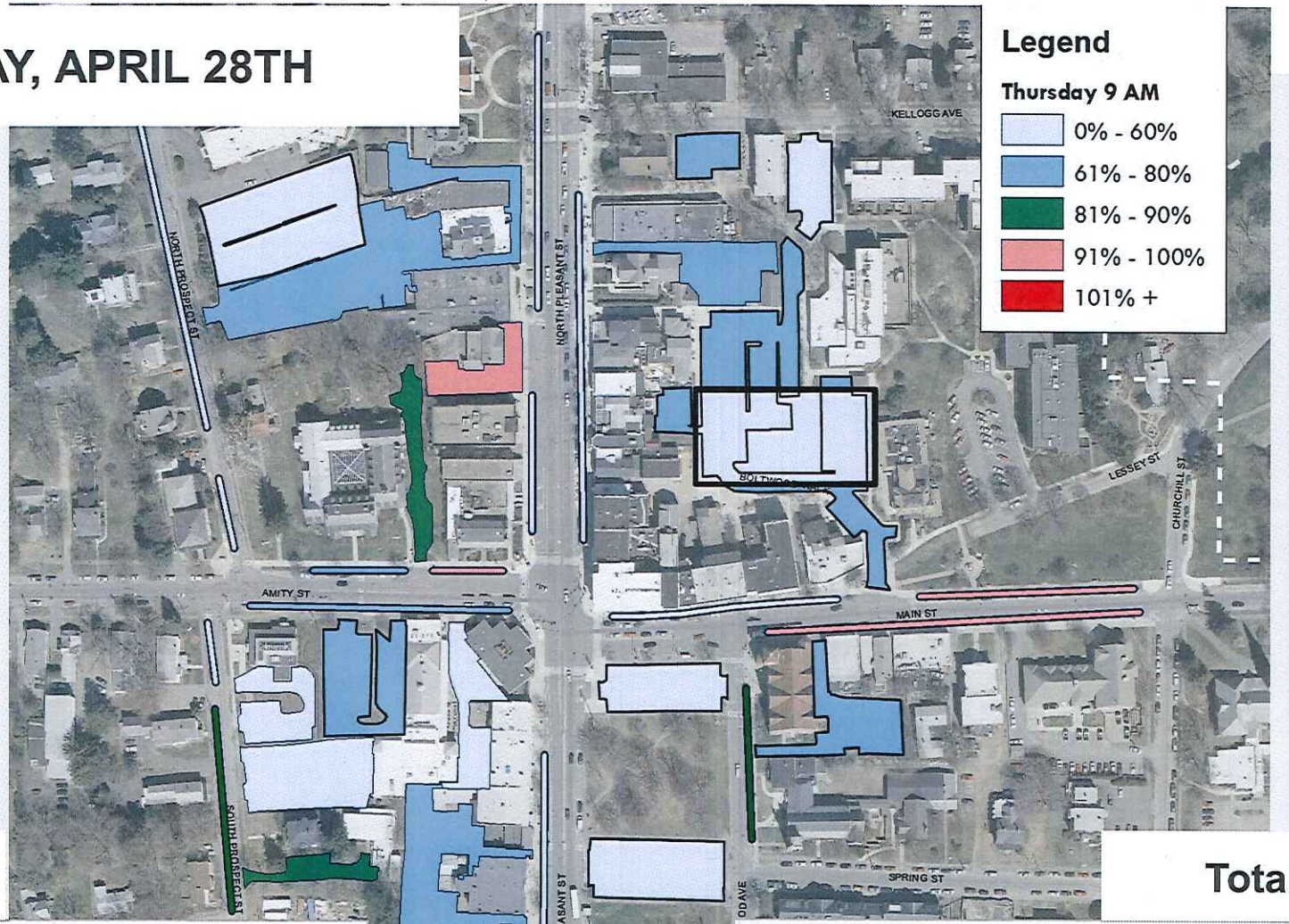
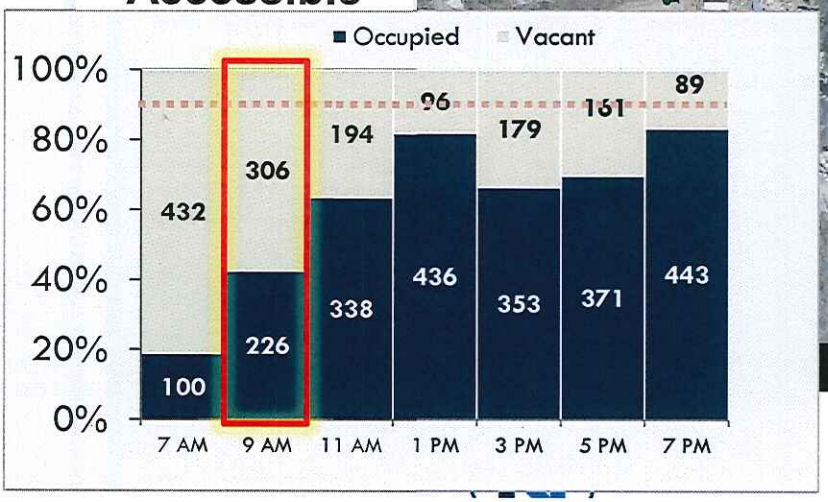


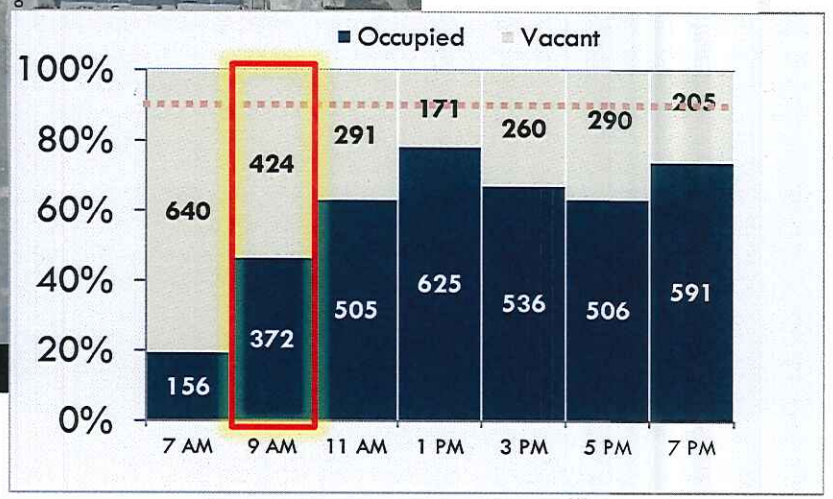
THURSDAY, APRIL 28TH



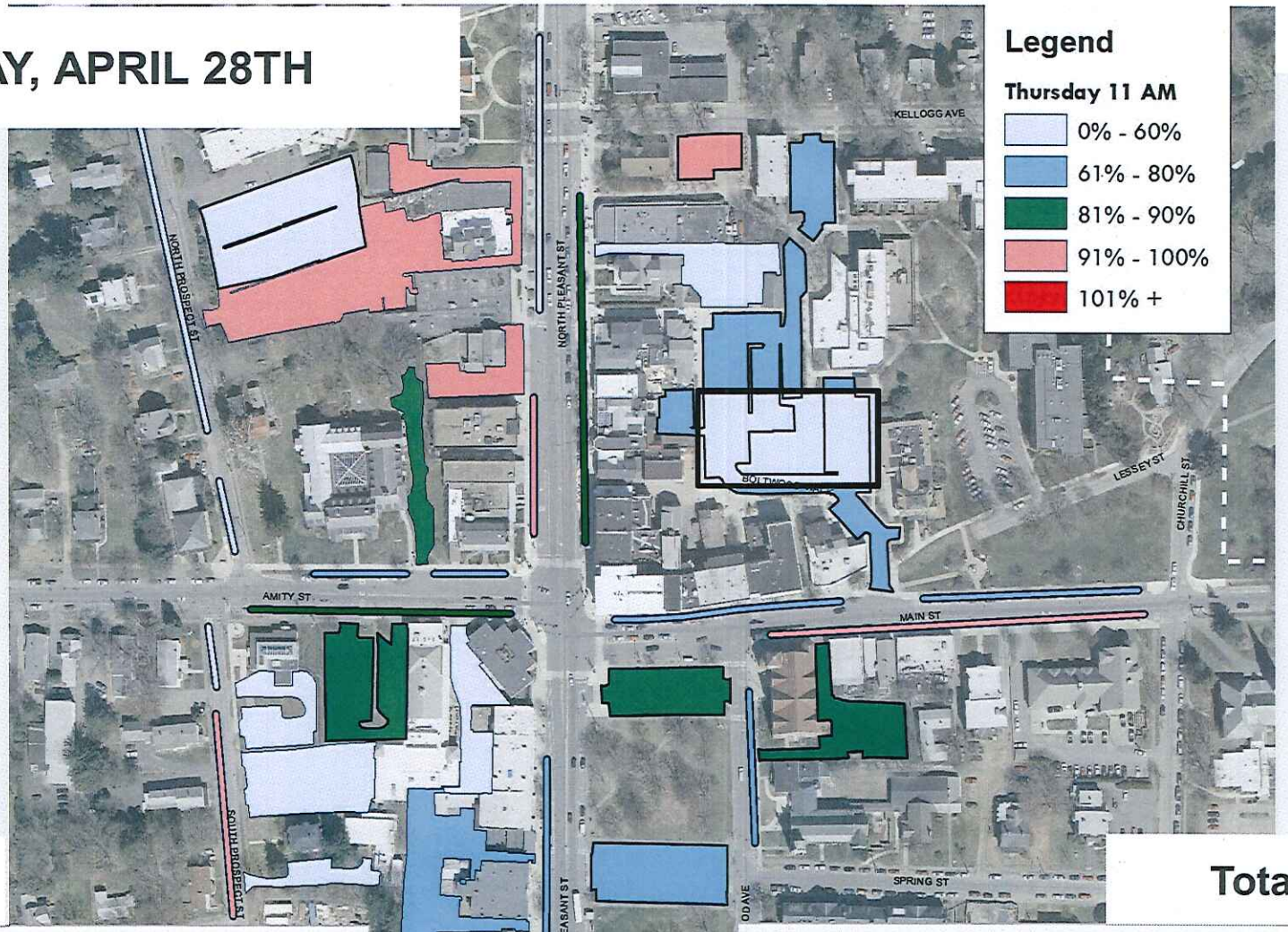
Publicly Accessible



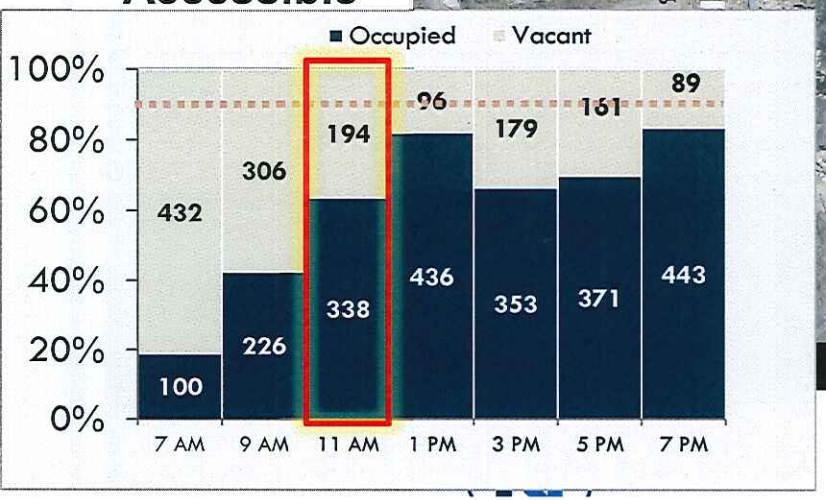
Total



THURSDAY, APRIL 28TH



Publicly Accessible



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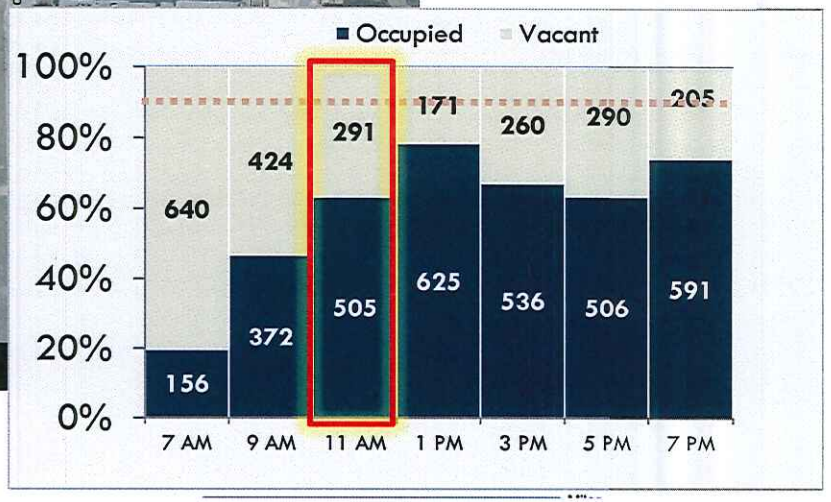
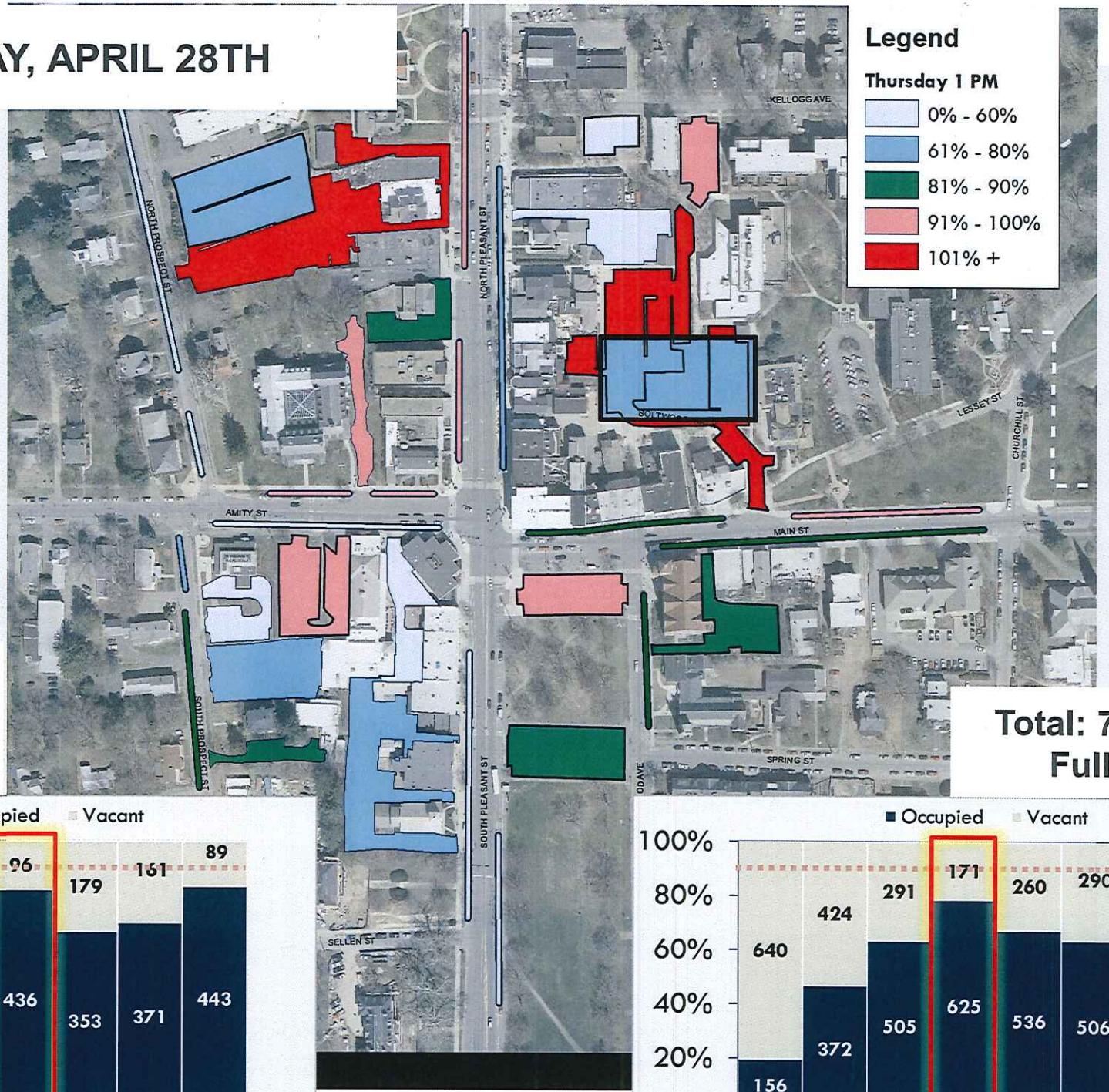
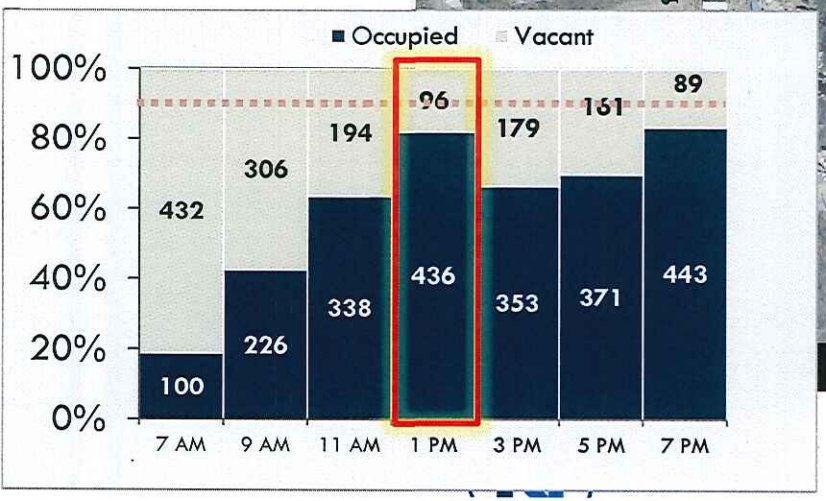


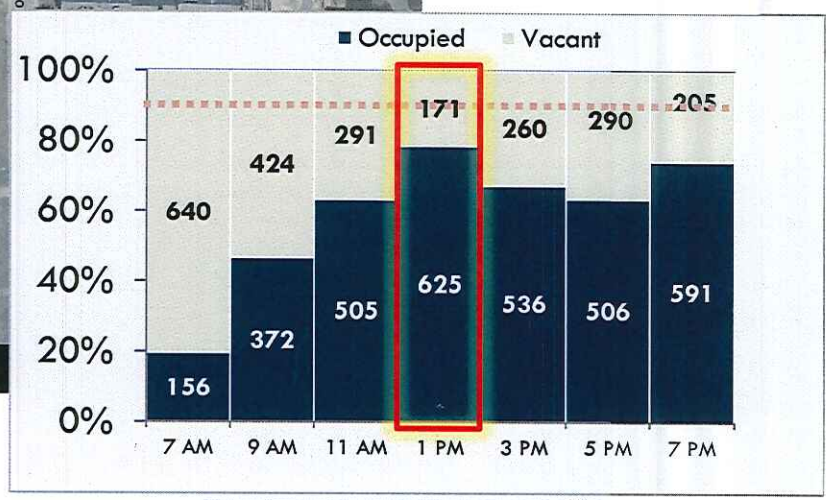
THURSDAY, APRIL 28TH



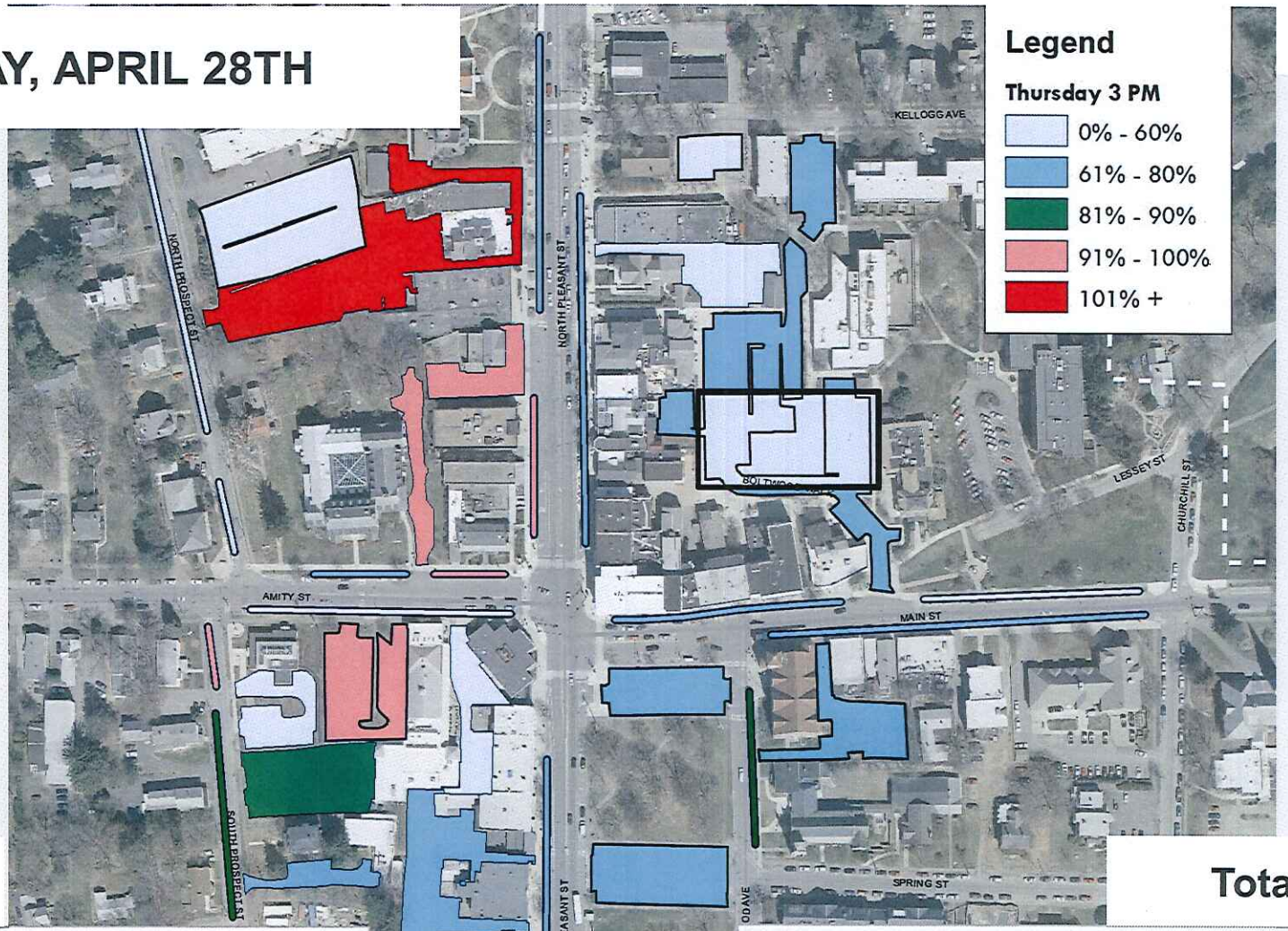
Publicly Accessible: 82% Full



Total: 79% Full



THURSDAY, APRIL 28TH



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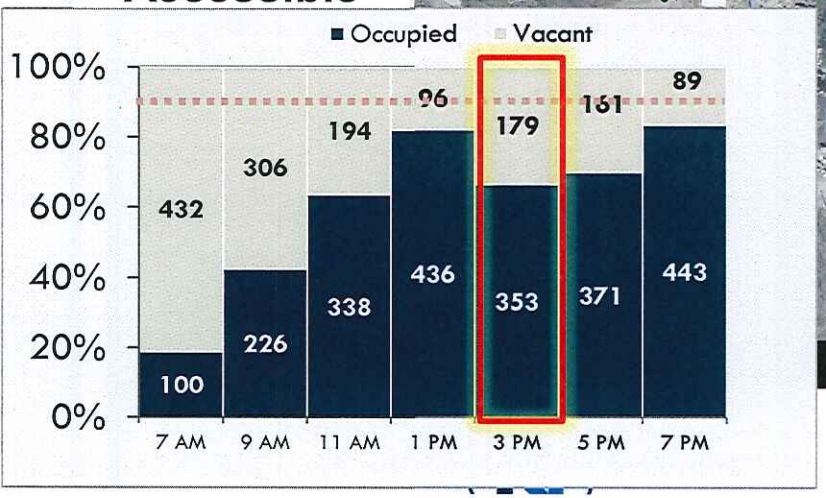
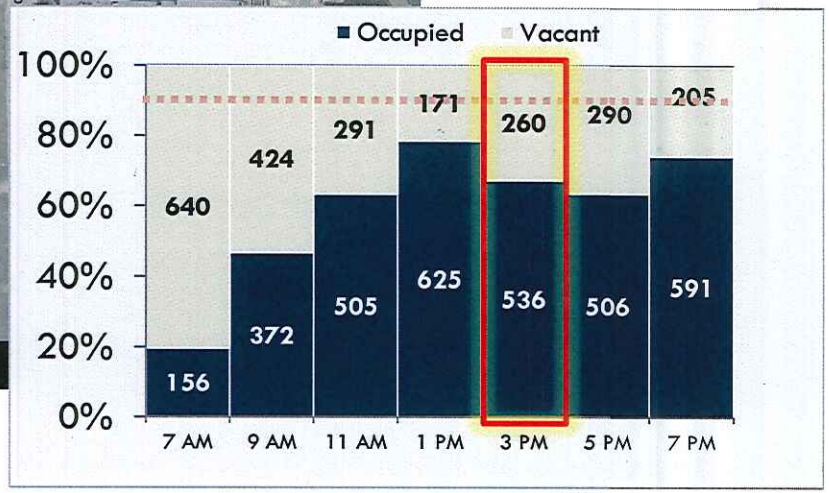
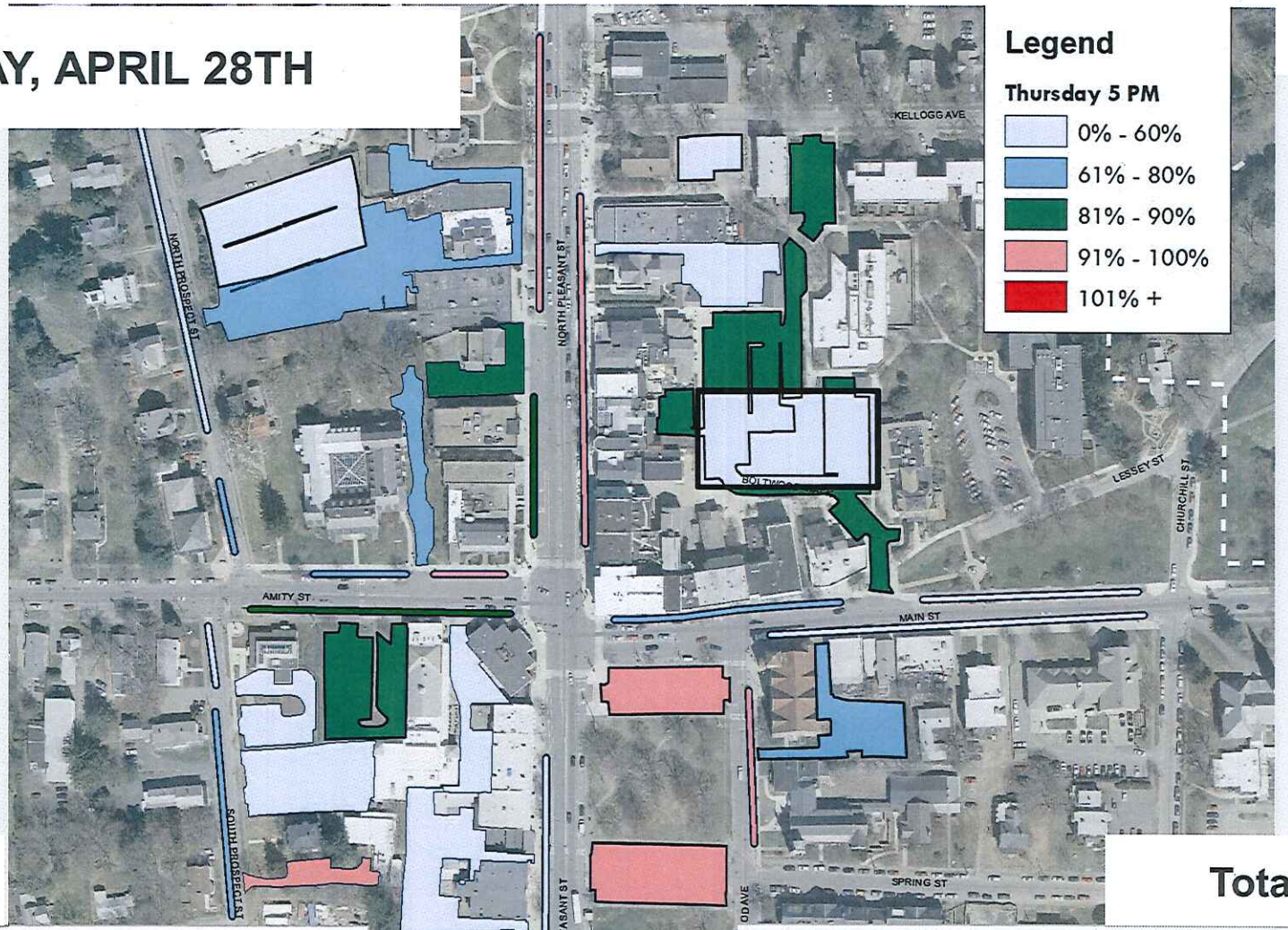


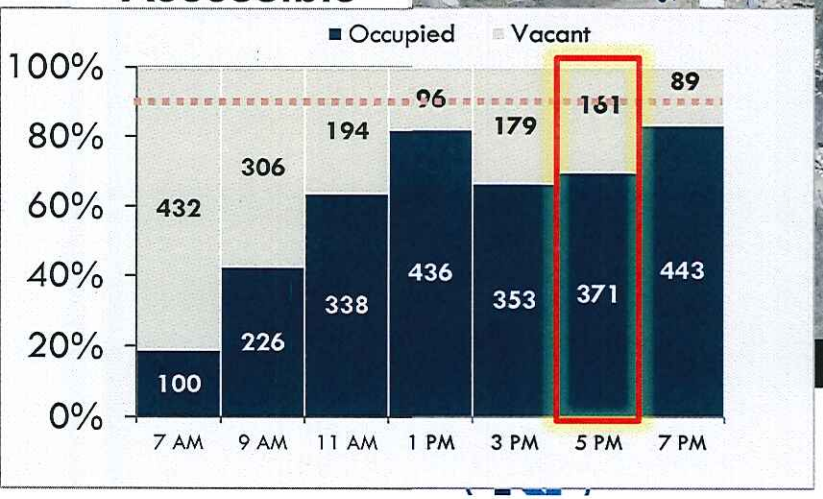
Total



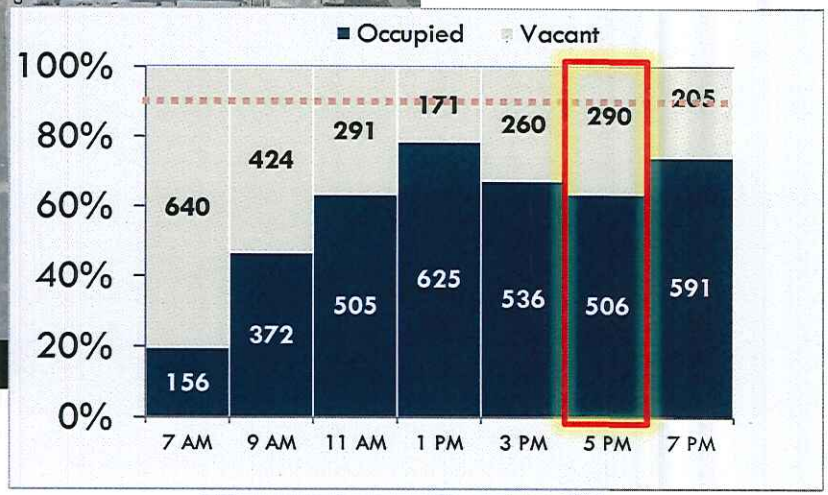
THURSDAY, APRIL 28TH



Publicly Accessible

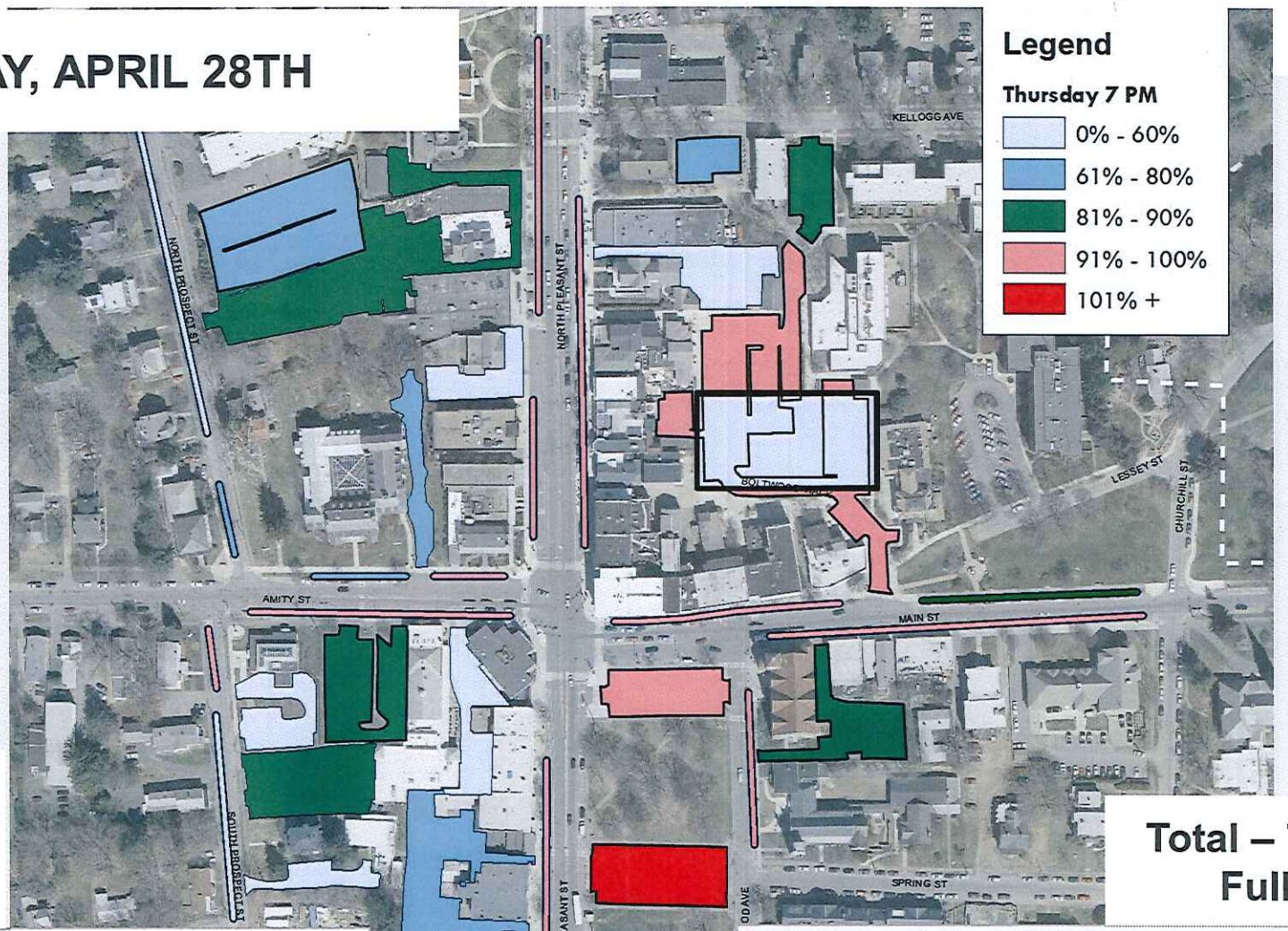


Total

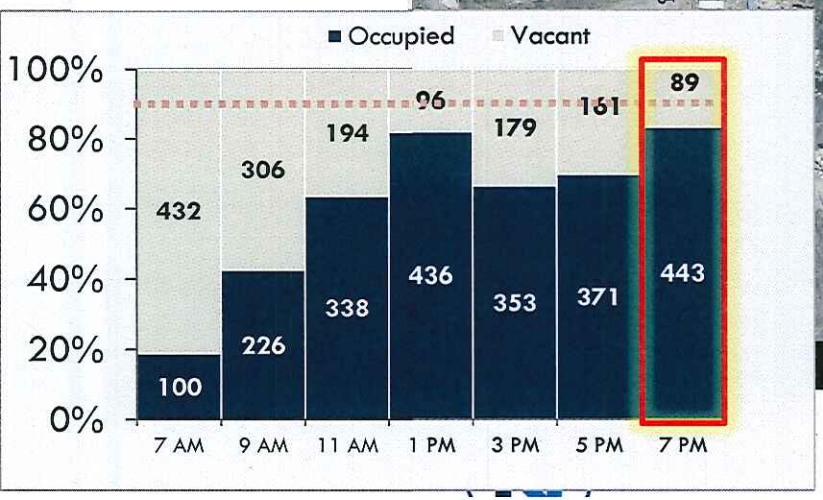


THURSDAY, APRIL 28TH

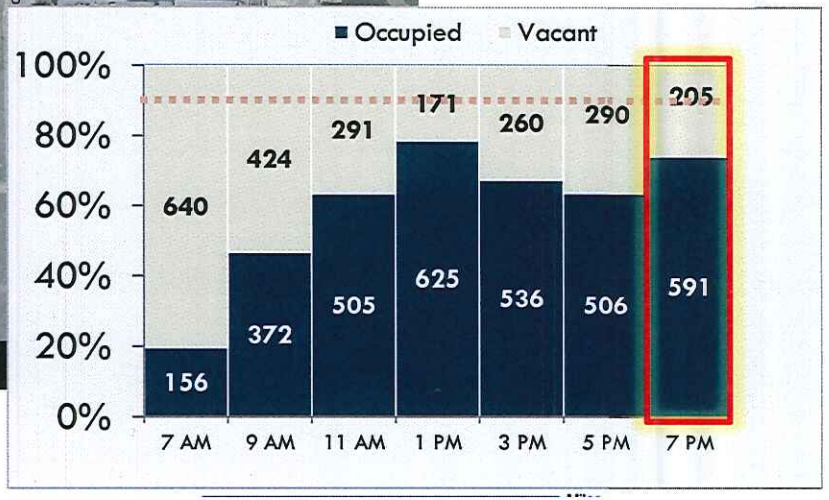
Most on-street restrictions end at 6:00 pm



Publicly Accessible – 83% Full



Total – 74% Full



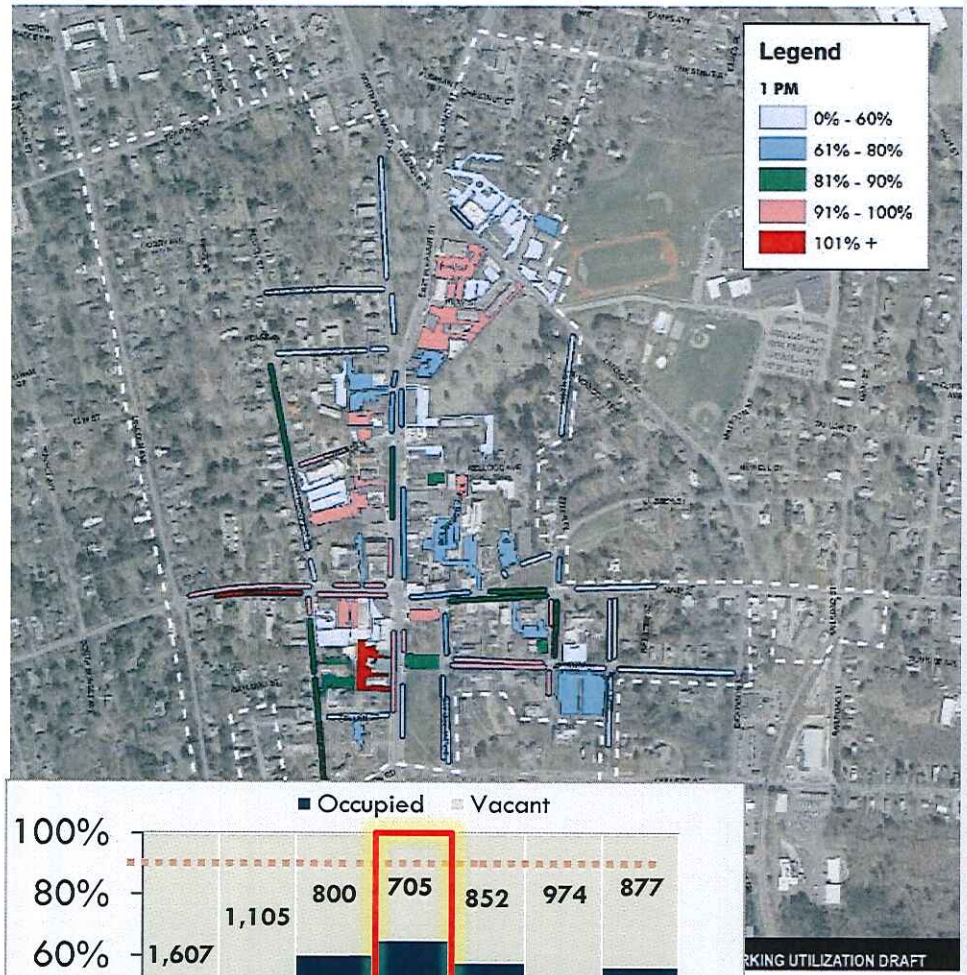
2016 versus the 2008 PVPC Study

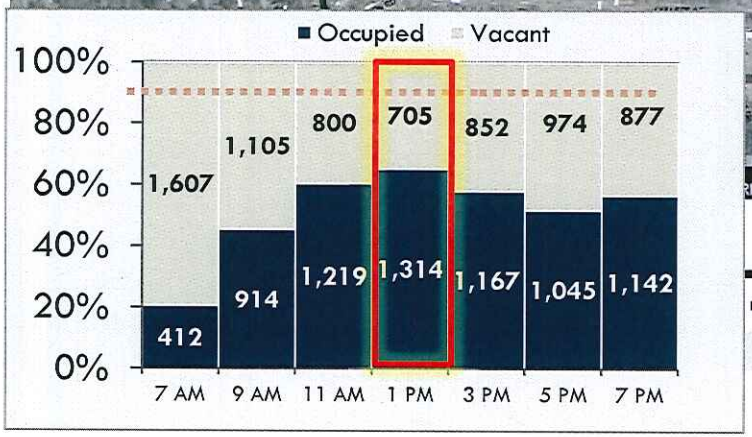
Changes from 2008-2016

- Context Changes:
  - Amherst Cinema in full operation
  - Jones Library growth
  - New residential development
- Regulatory Changes:
  - Reductions in overall supply
  - Converted ~10 total new free 15-min spaces in Town Center
  - Meter rates increased off-street from $0.40 to $0.50
  - Annual parking permits raised $5 (now $25/year)
  - Added Gaylord Street, Spring Street to permit parking
  - Allowed permit parking in any metered space on the lower level of the Boltwood Garage and in the CVS Lot

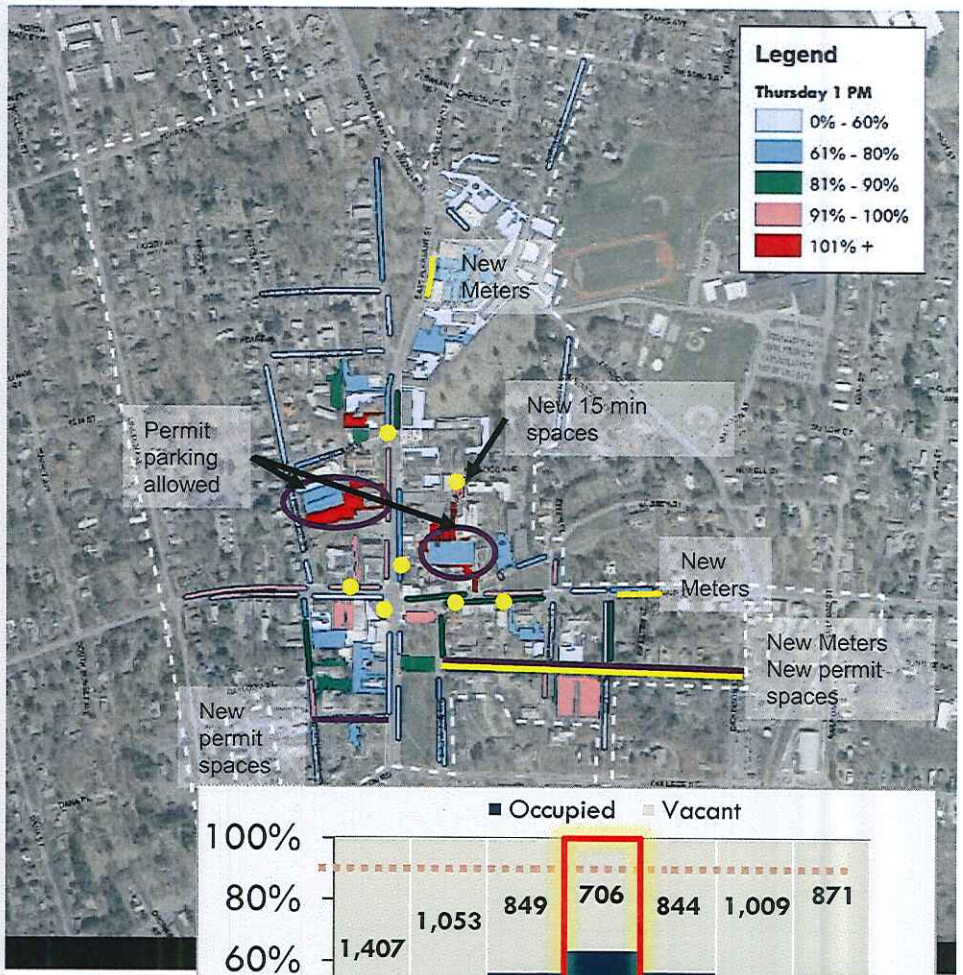
Parking peak has not changed…

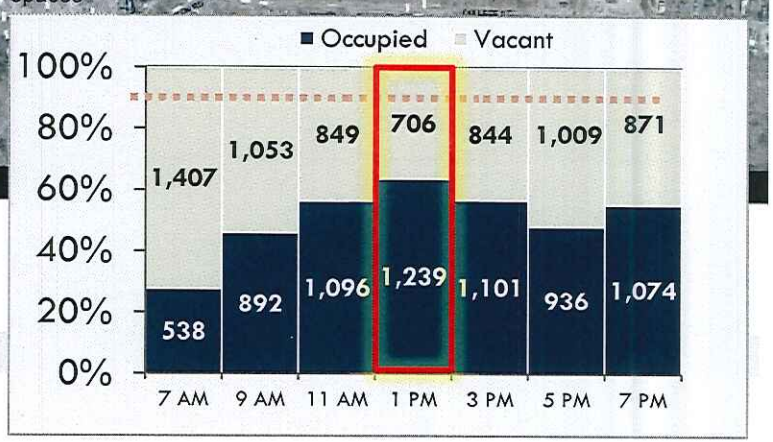
2008 Parking Data





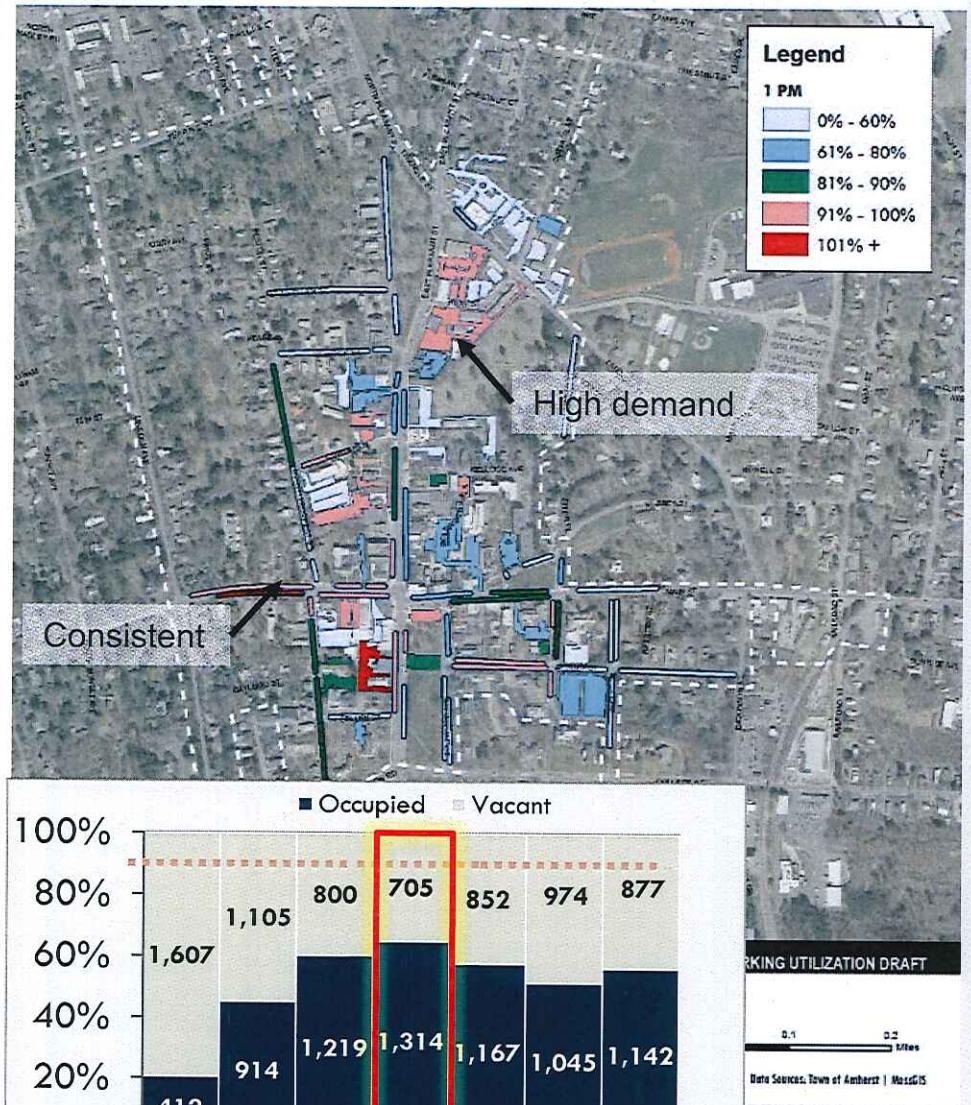
2016 Several Regulatory Changes

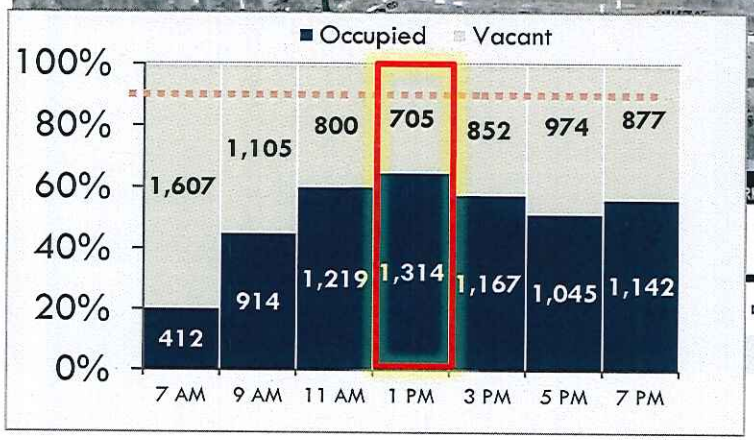




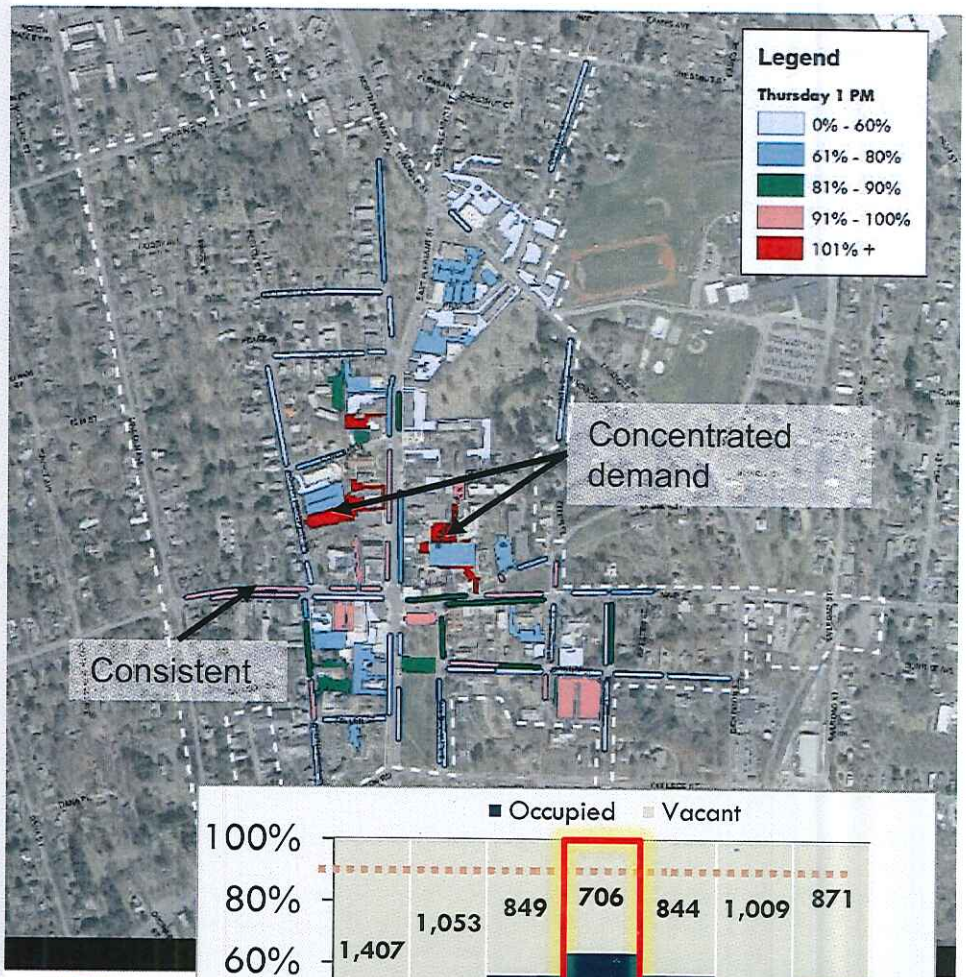
Parking peak has not changed…
…but patterns have

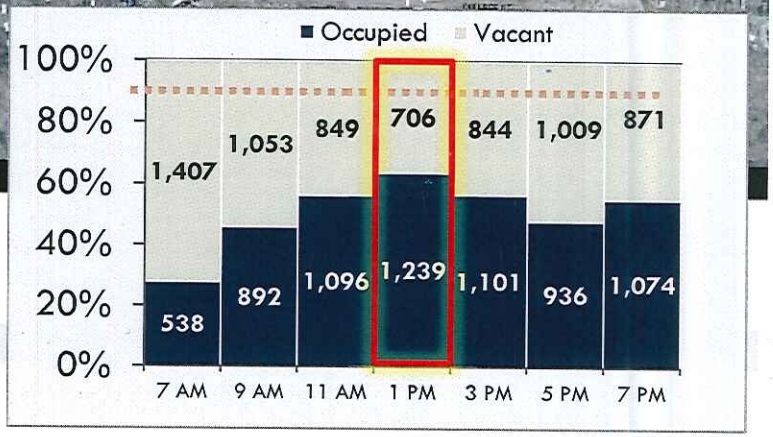
2008 Parking Data

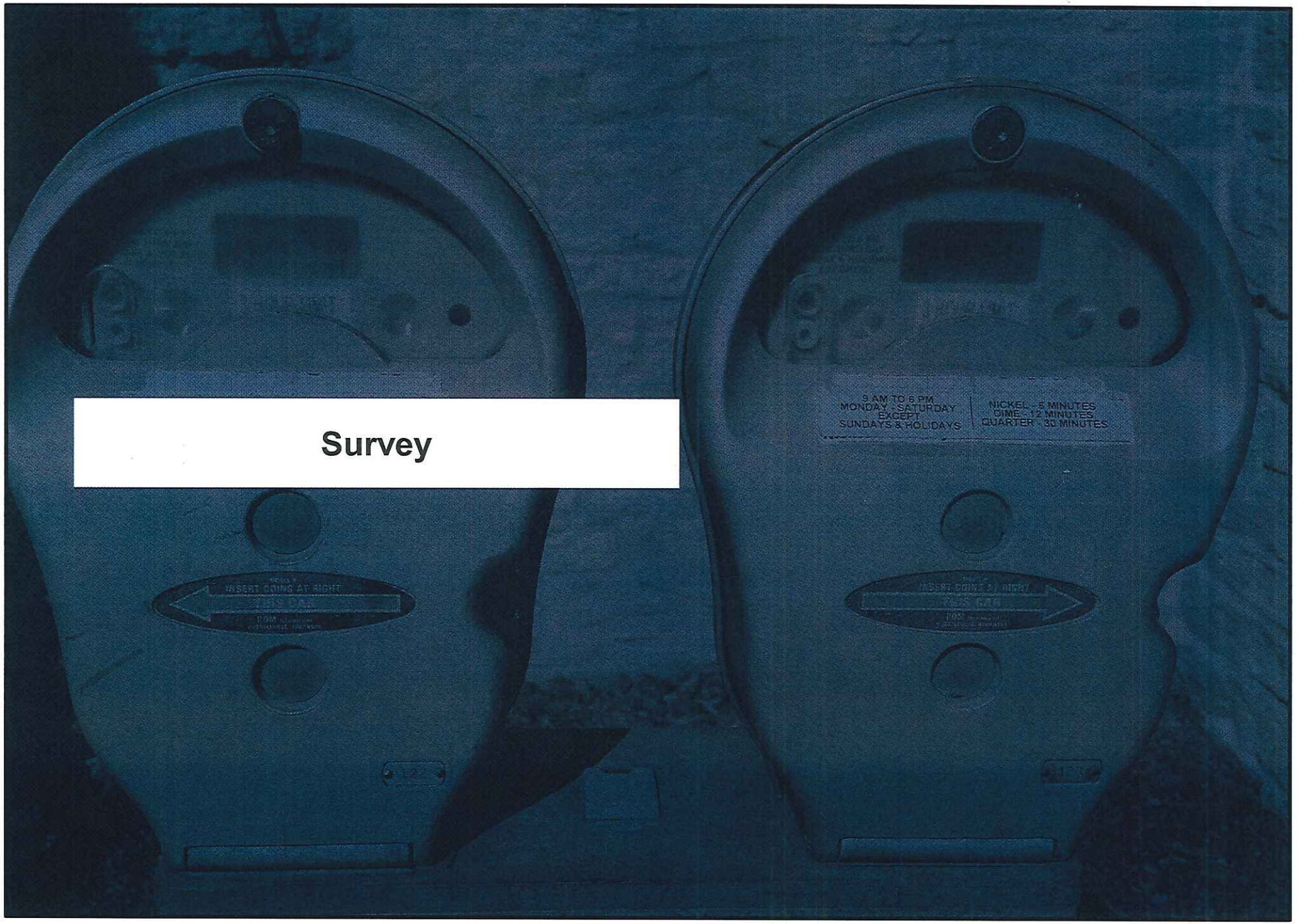




2016 Parking Data



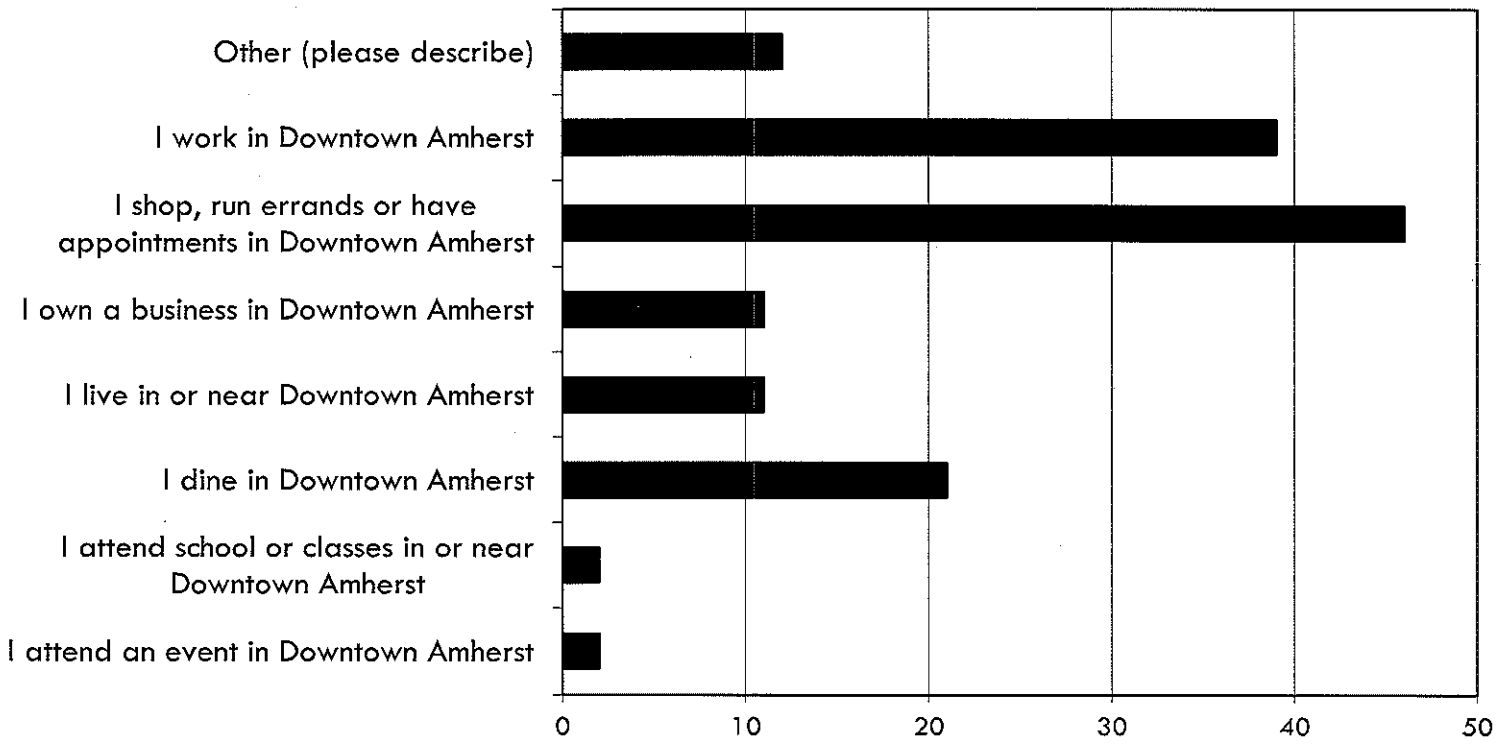



9 AM TO 6 PM
MONDAY - SATURDAY
EXCEPT
SUNDAYS & HOLIDAYS
NICKEL - 6 MINUTES
DIME - 12 MINUTES
QUARTER - 30 MINUTES
INSERT COINS AT RIGHT
INSERT COINS AT RIGHT

Survey

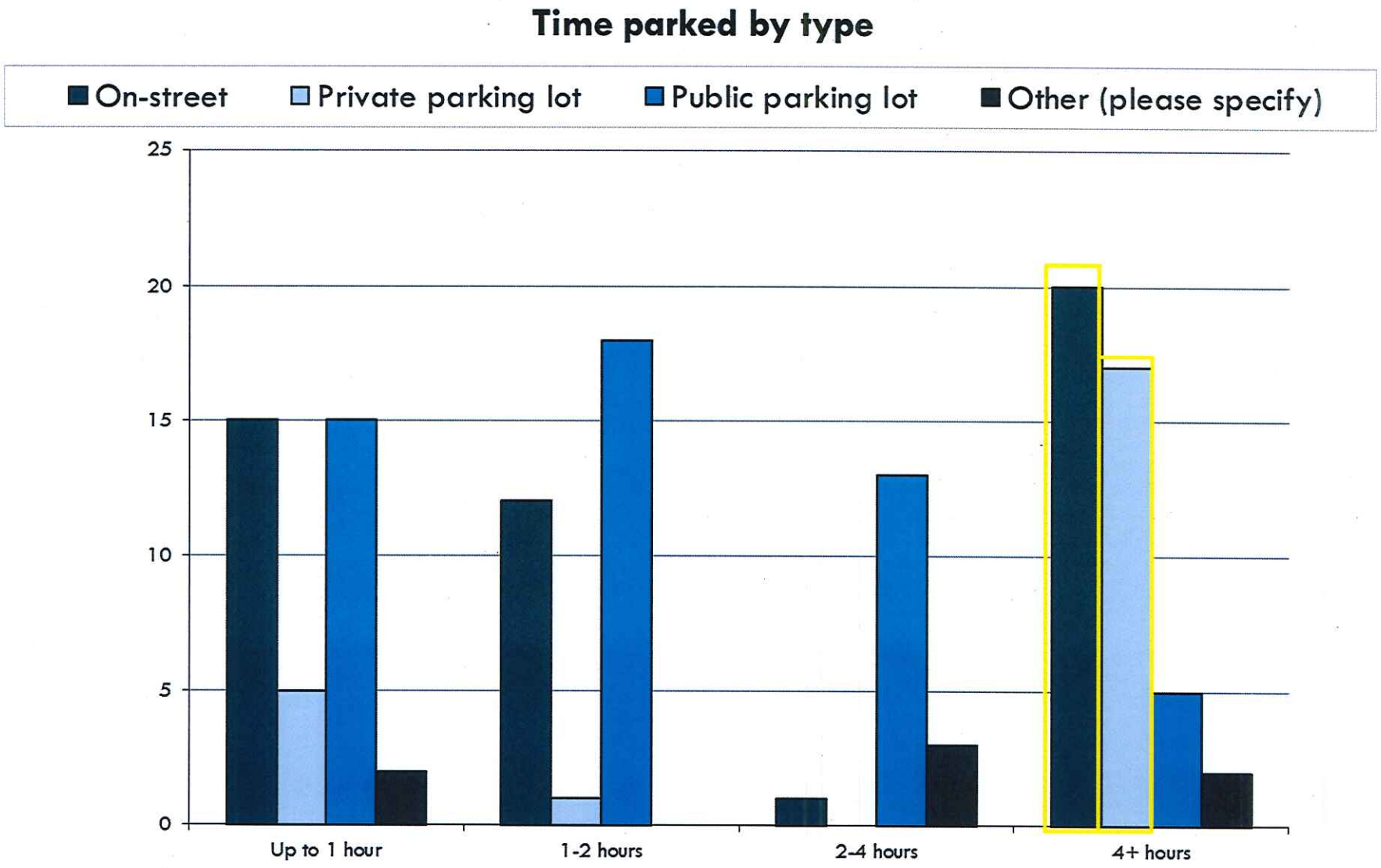
Survey Results

- 147 Respondents
  - March 14 - June 6
- 24 Intercept
- 50% Visitors
- 33% Employees



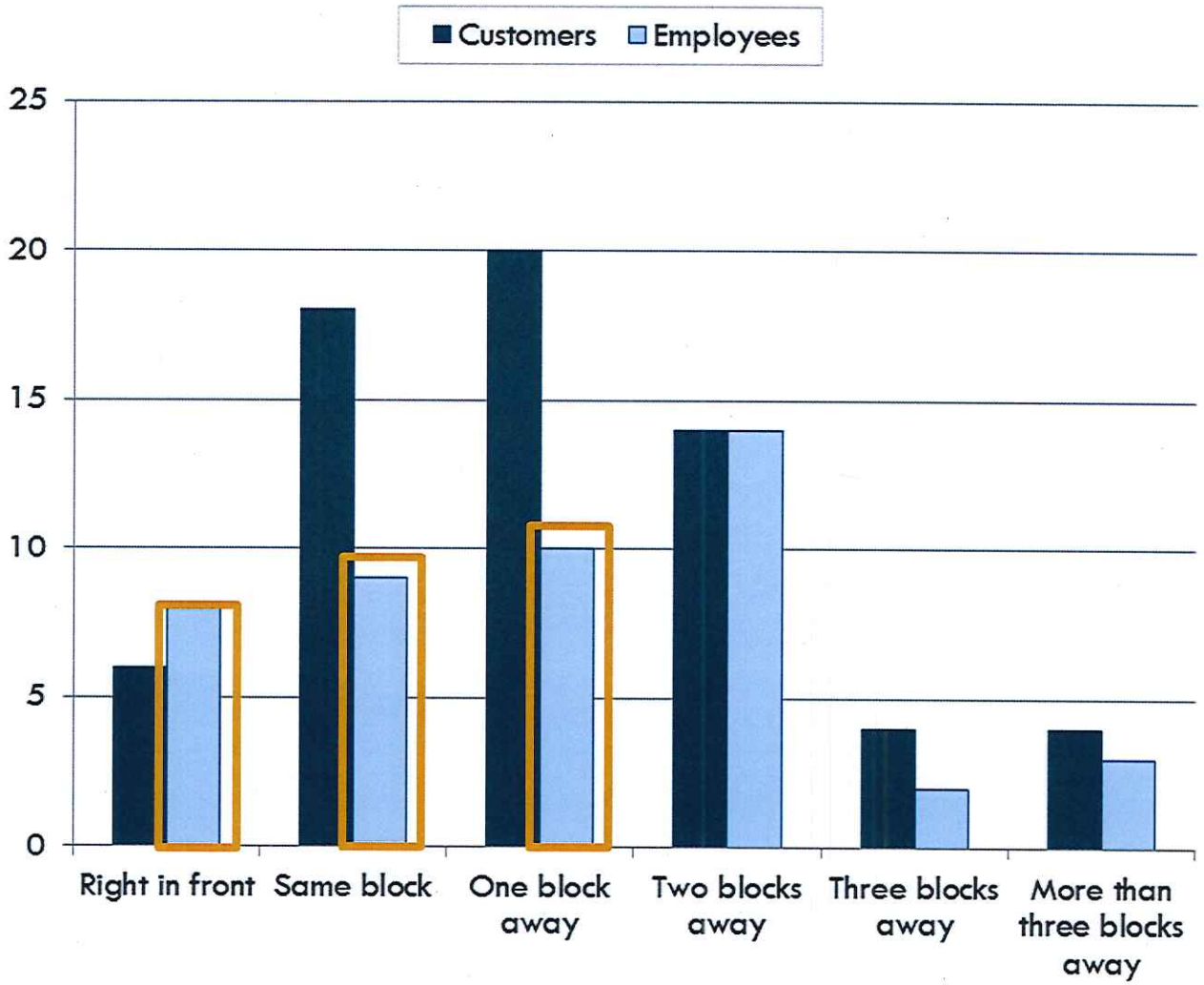
Source: Survey respondents

Where do you typically park?



Source: Survey respondents

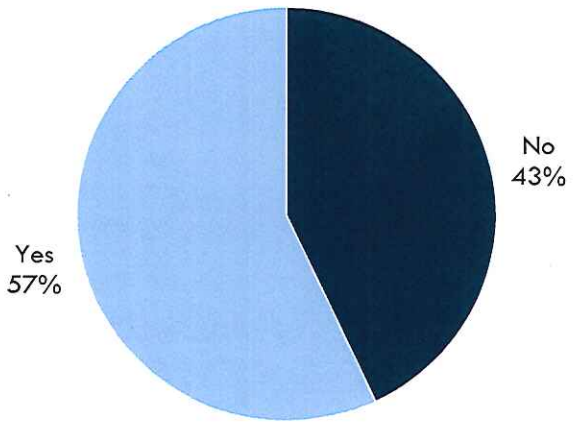
Where do you typically park?



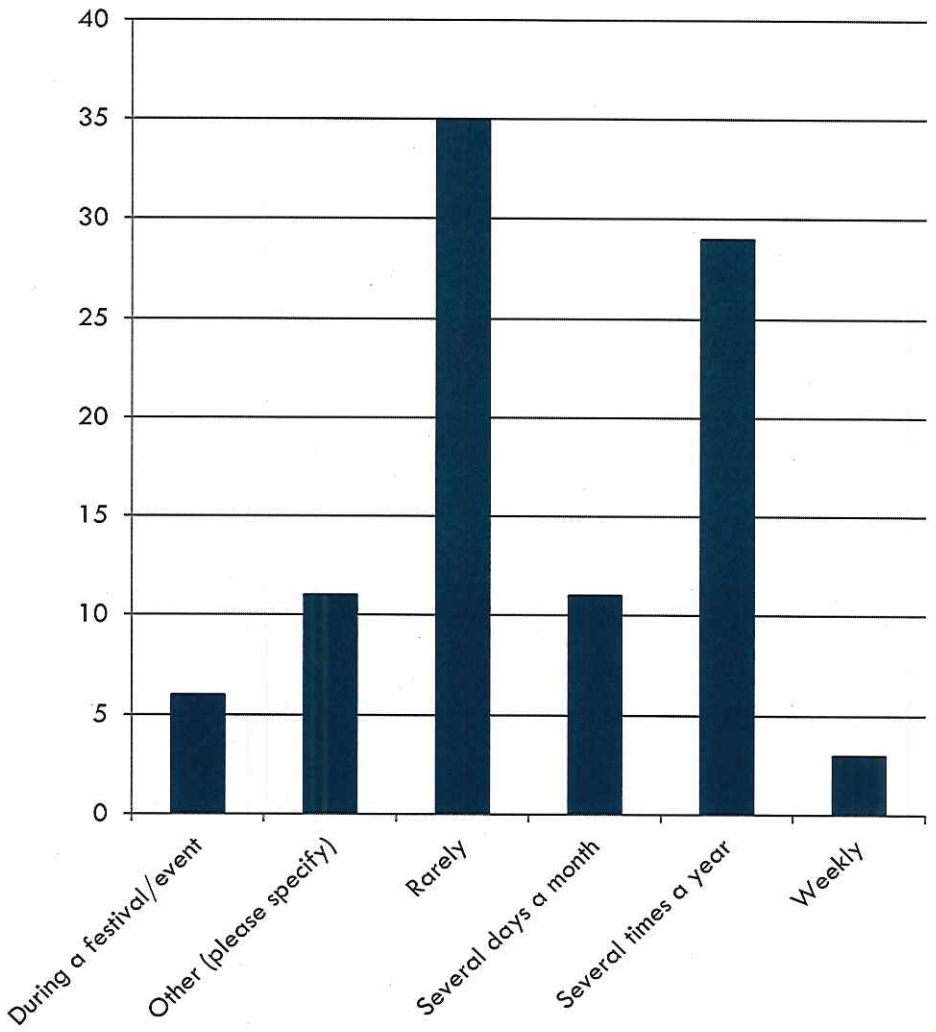
Source: Survey respondents

Perceptions Matter

Have you ever failed to find parking and just left?

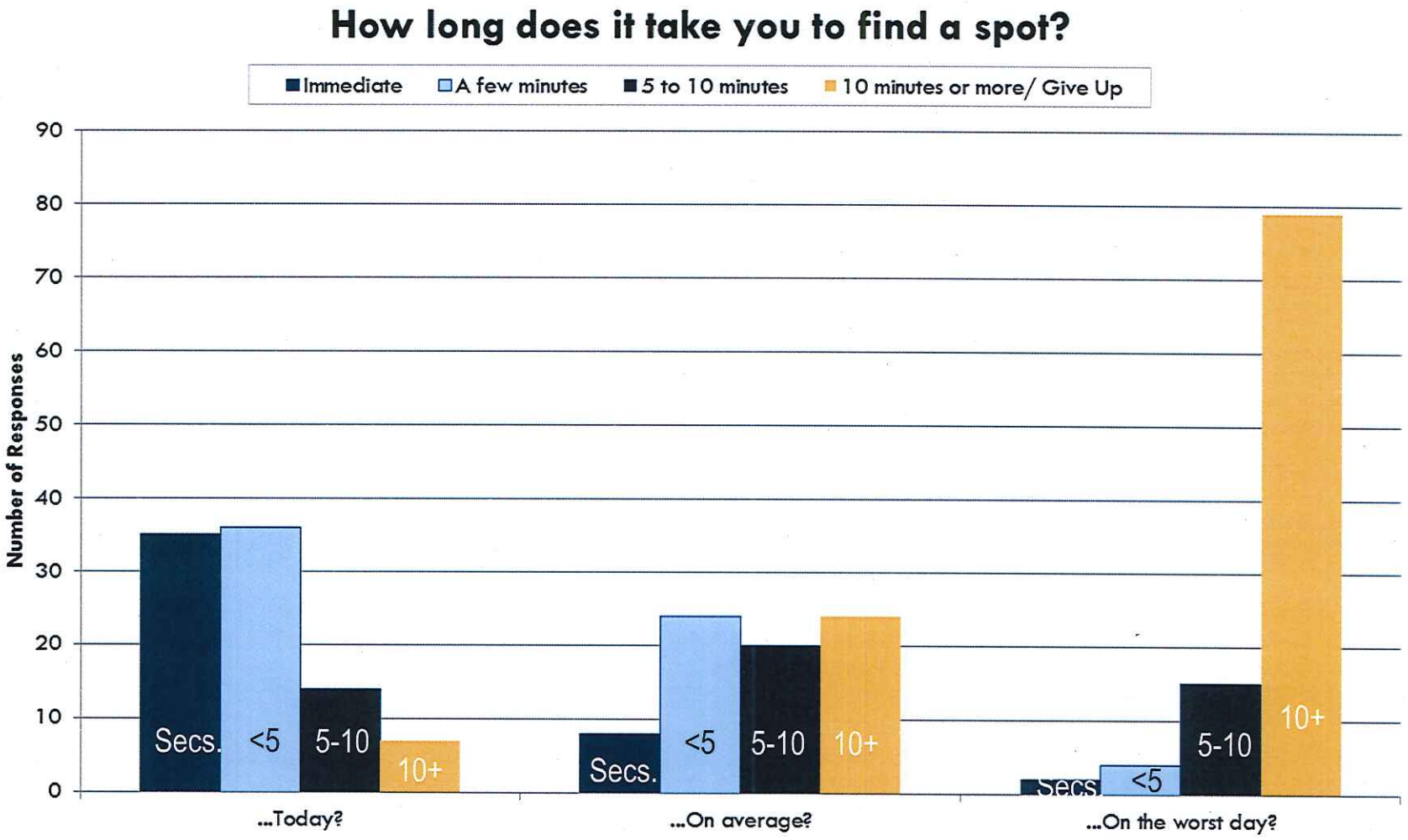


How Often?



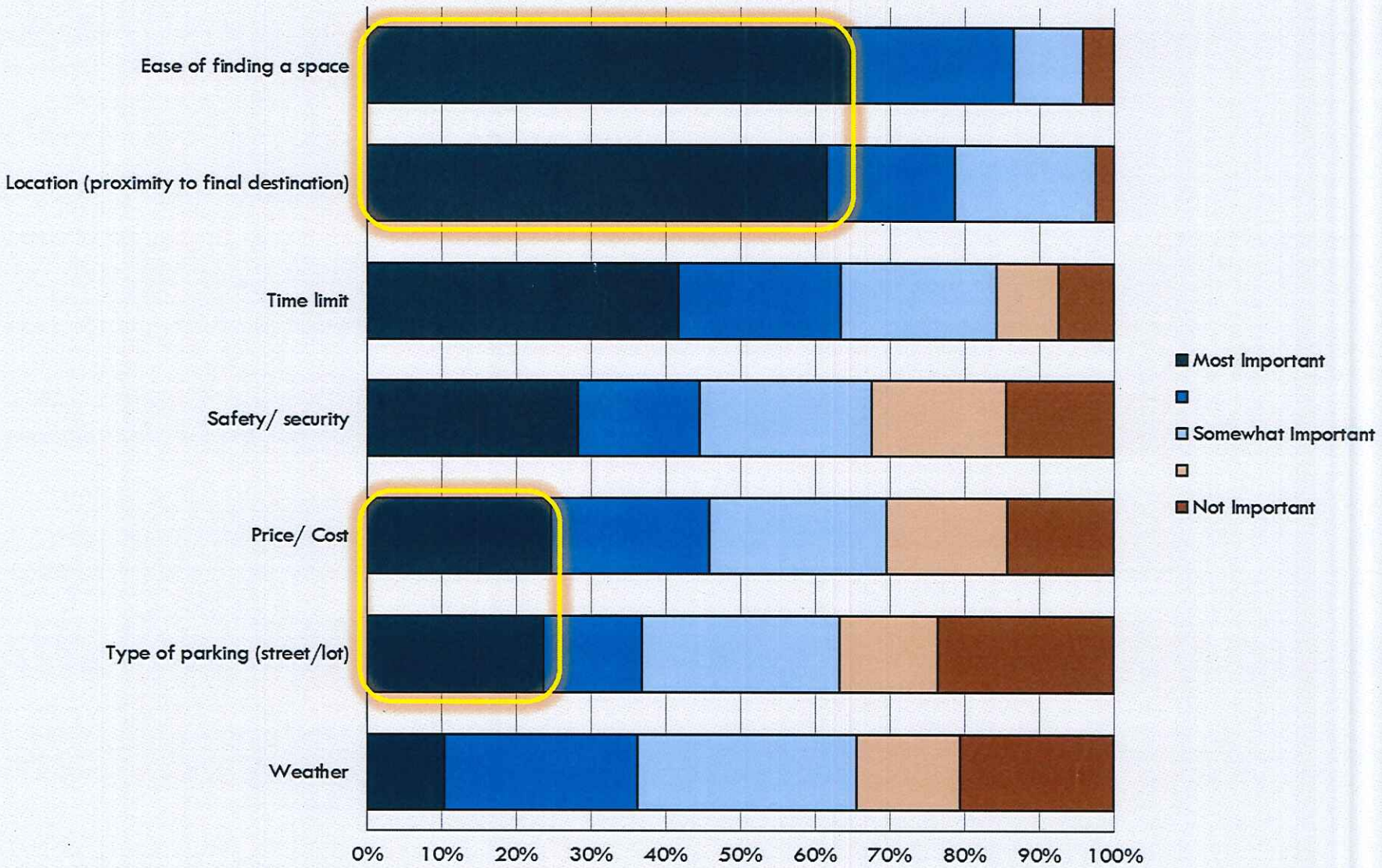
Source: Survey respondents

Perceptions Matter

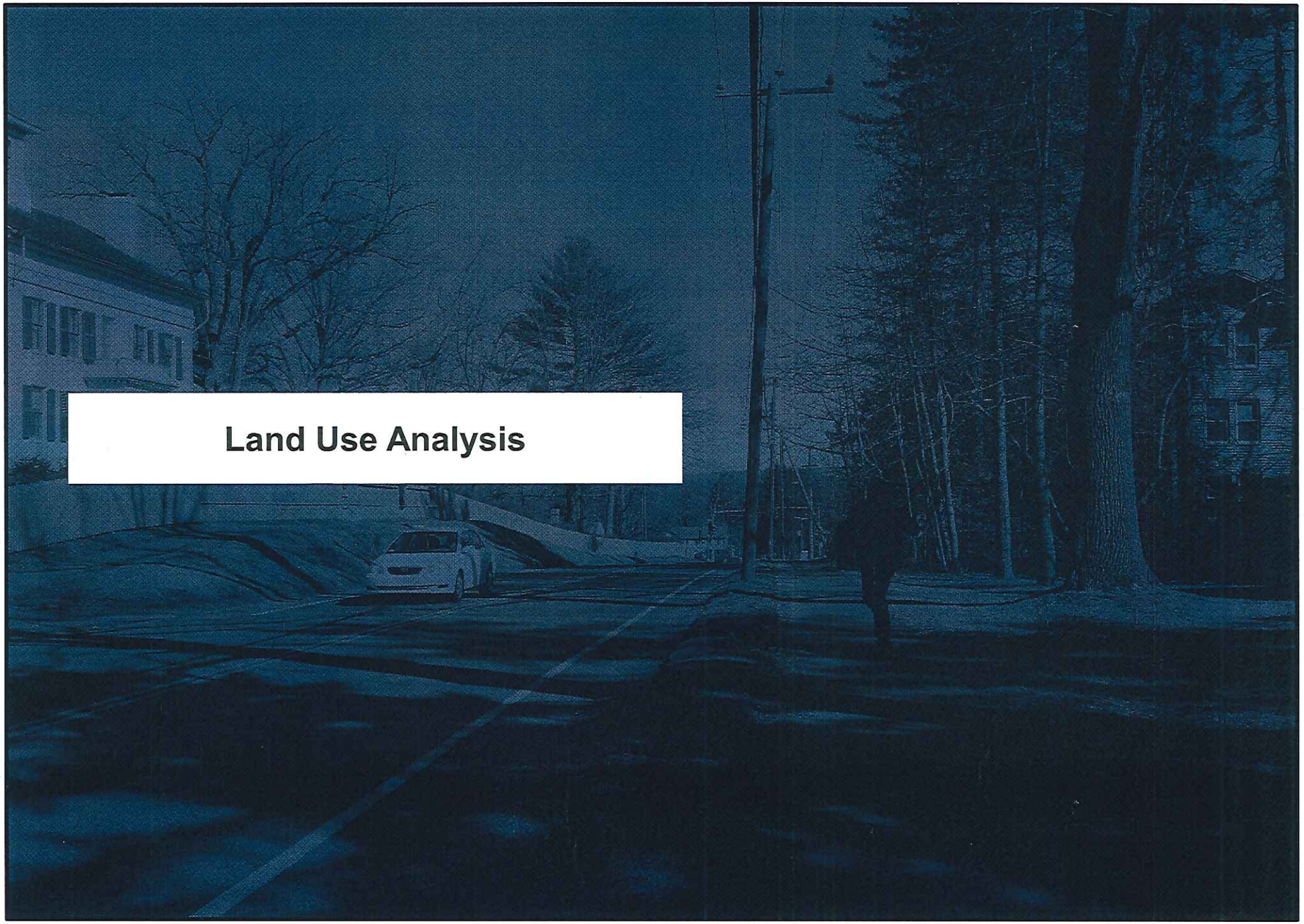


Source: Survey respondents

What is Most Important in Selecting a Parking Space?

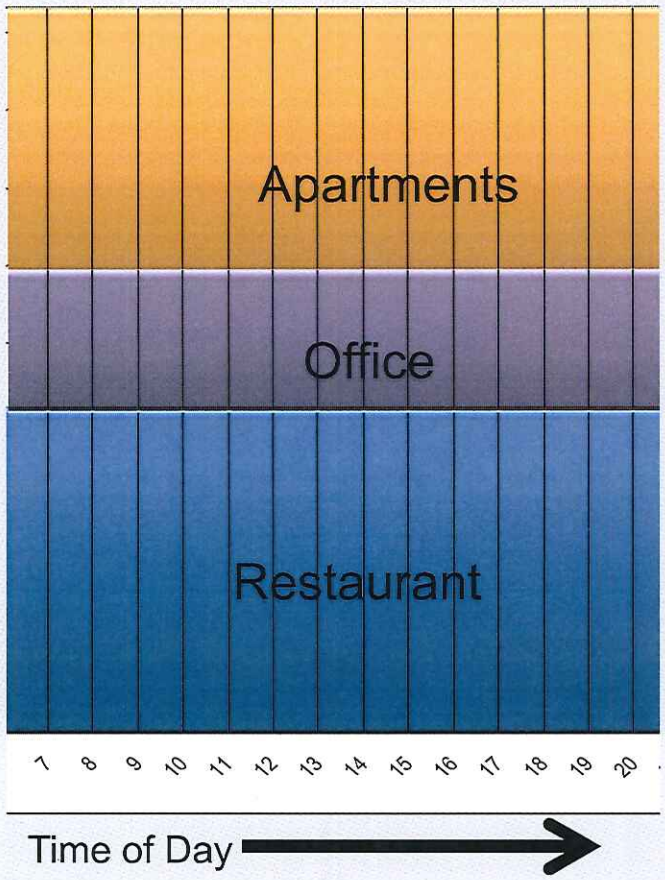


Source: Survey respondents

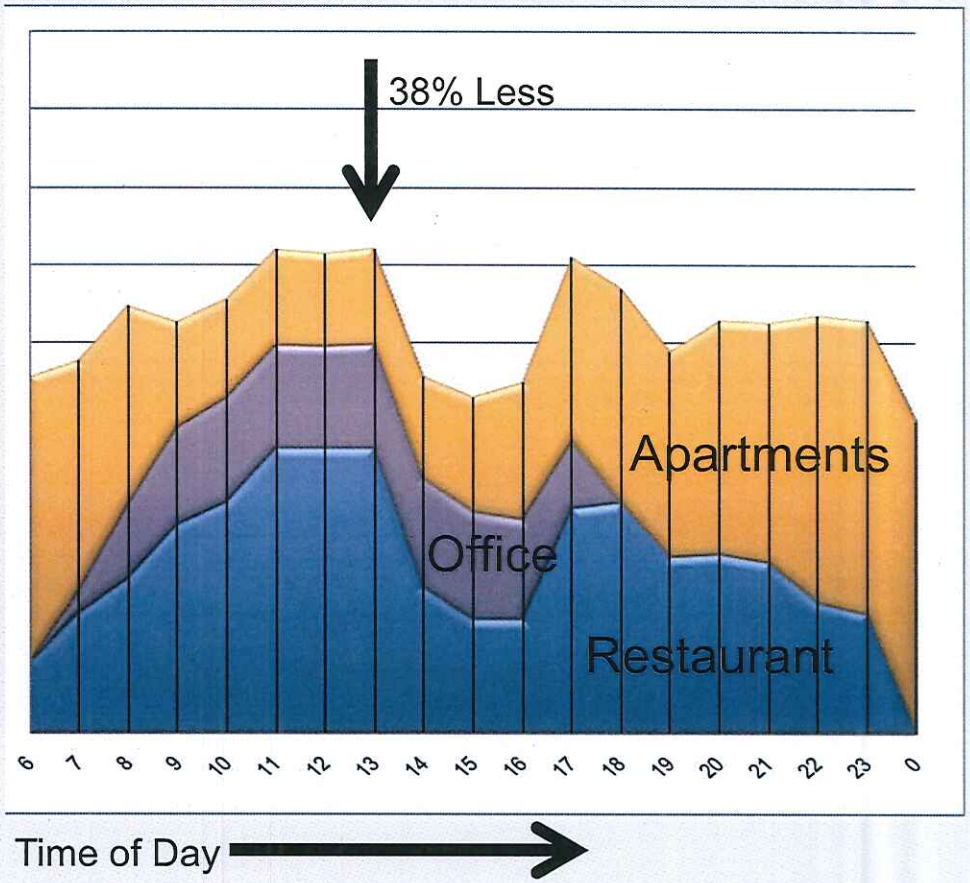

Land Use Analysis

How Is Parking Used in Amherst?

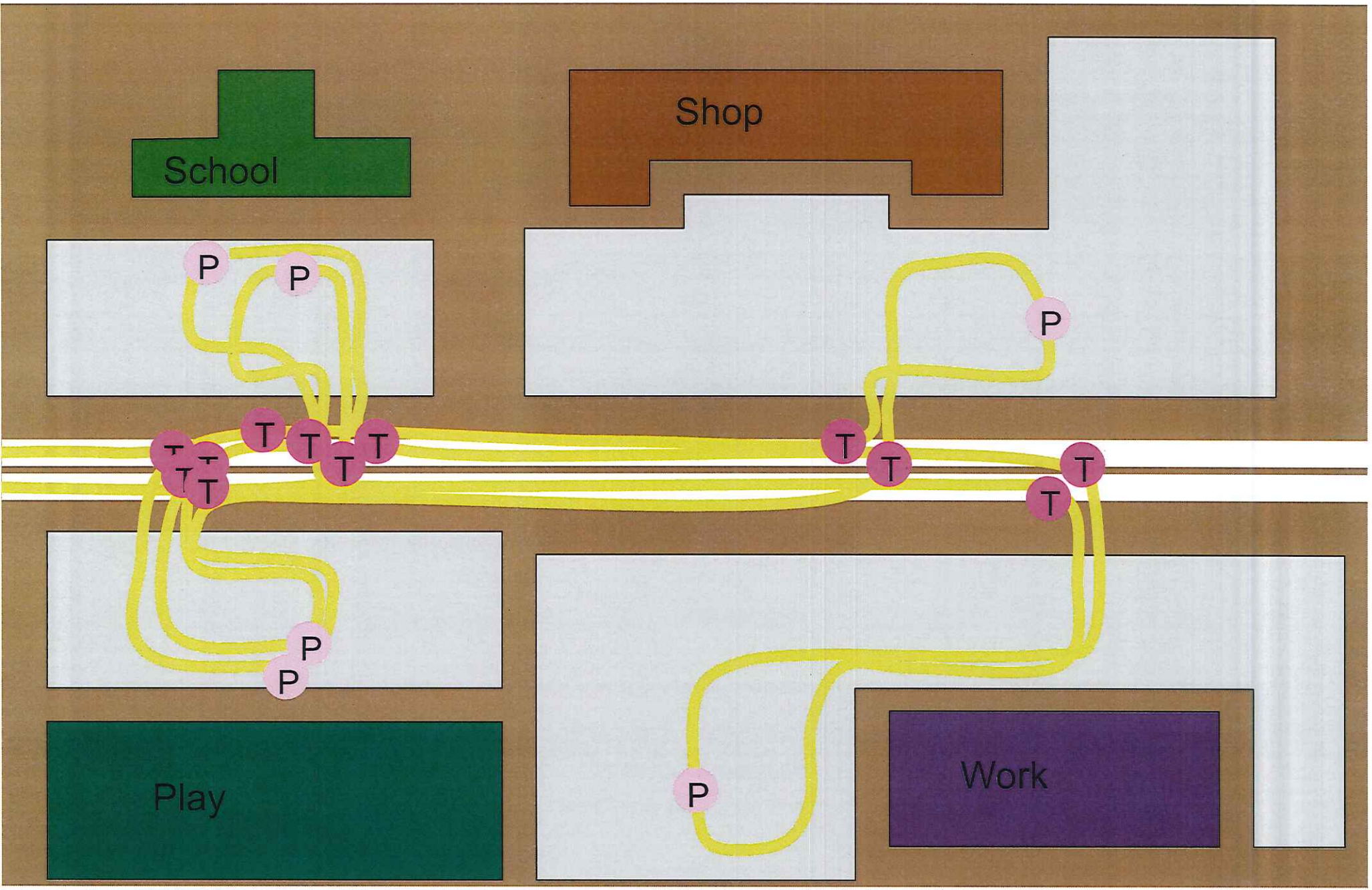
Dedicated Supply



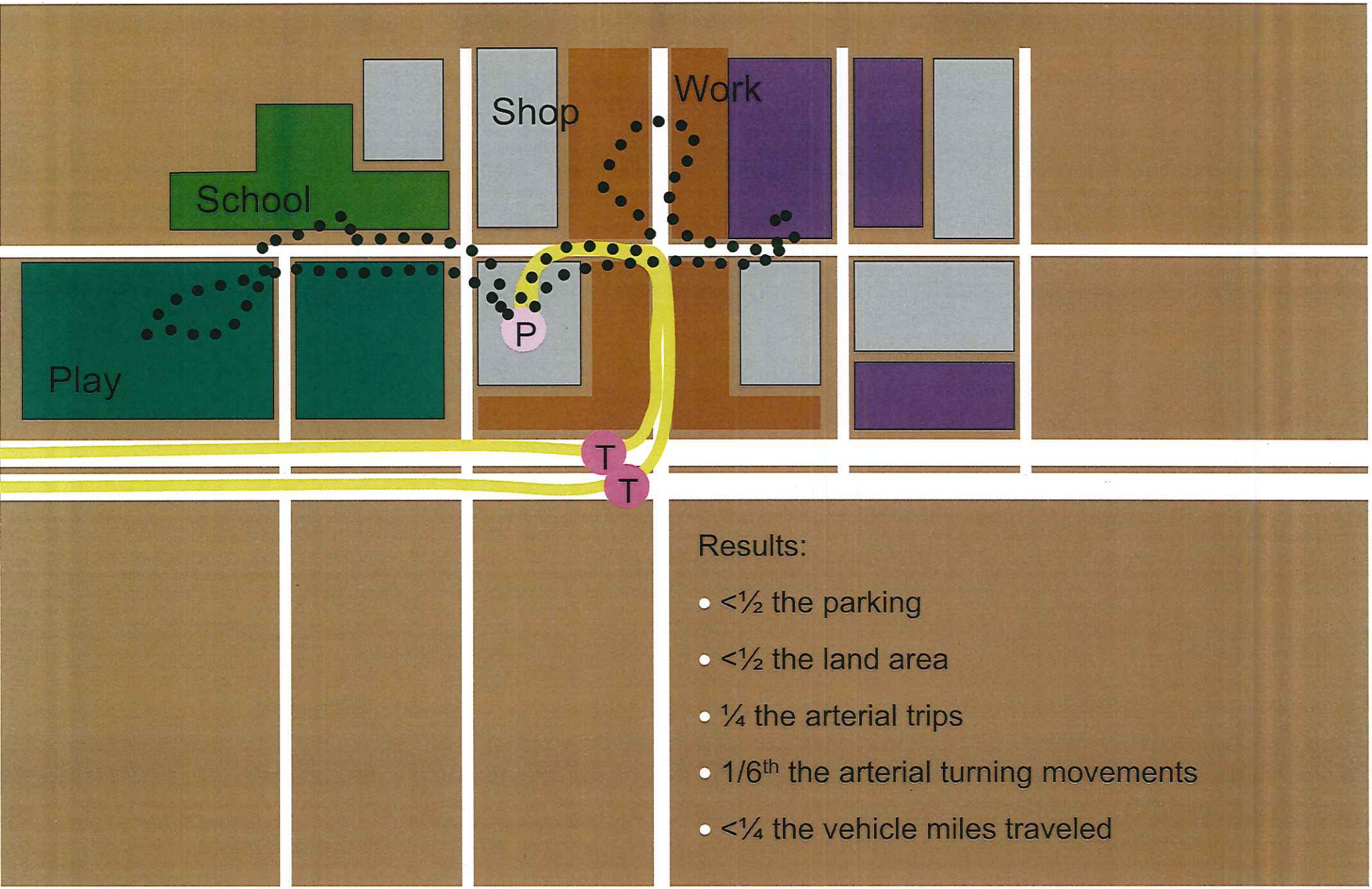
Real Demand



Conventional Development



Mixed Use, Park Once District



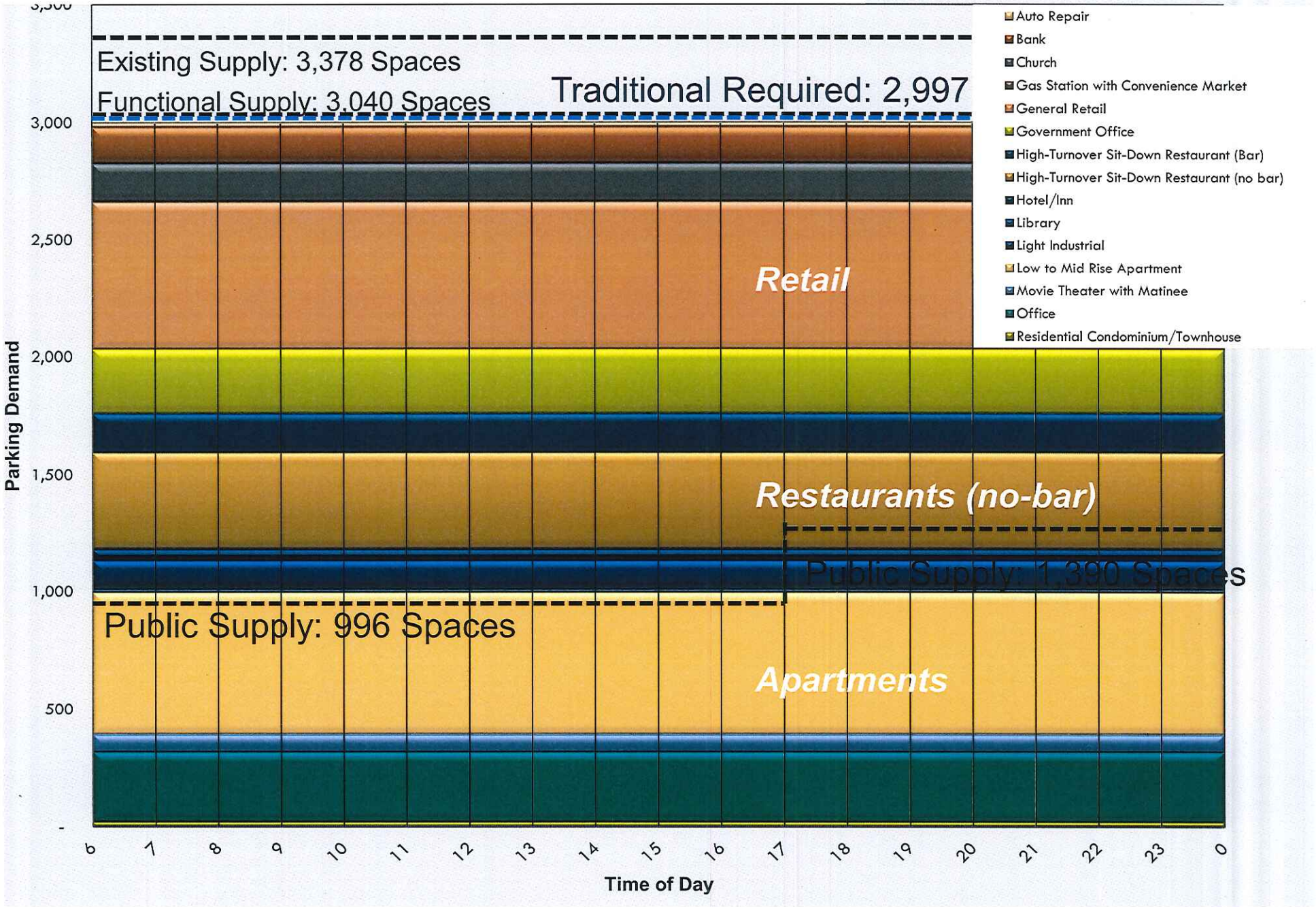
Results:

- <½ the parking
- <½ the land area
- ¼ the arterial trips
- 1/6th the arterial turning movements
- <¼ the vehicle miles traveled

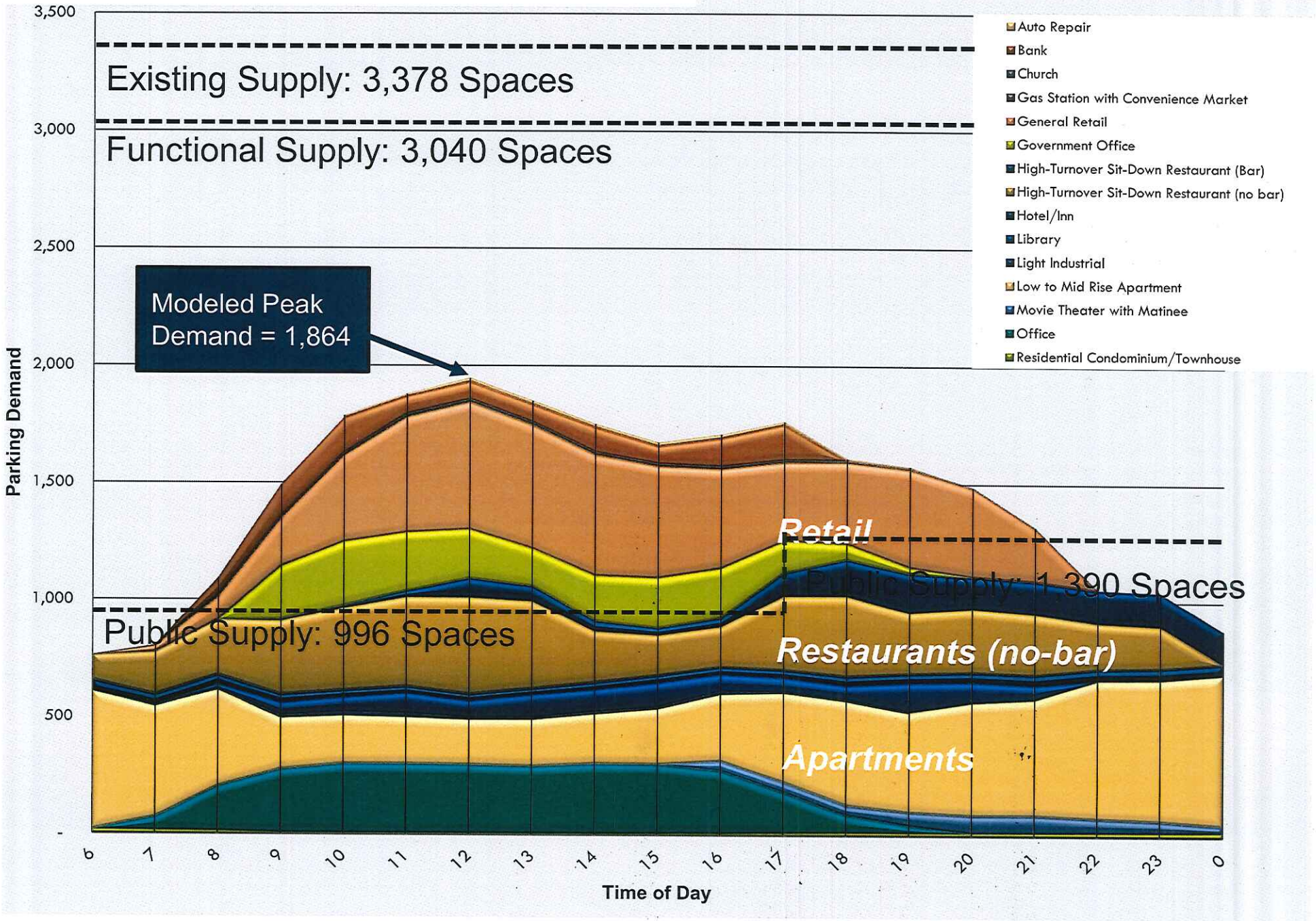
Land Use in Downtown Amherst

Land Use	Size	Units
Light Industrial	20,000	square feet
General Retail	212,000	square feet
Auto Repair	7,000	square feet
Gas Station	4	pumps
Hotel/Inn	55	Rooms
Bank	38,000	square feet
Restaurant (no bar)	74,000	square feet
Restaurant (Bar)	13,000	square feet
Movie Theater	280	seats
Church	43,000	square feet
Library	48,000	square feet
Office	150,000	square feet
Government Office	65,000	square feet
Apartments	530	units
Condos	14	units

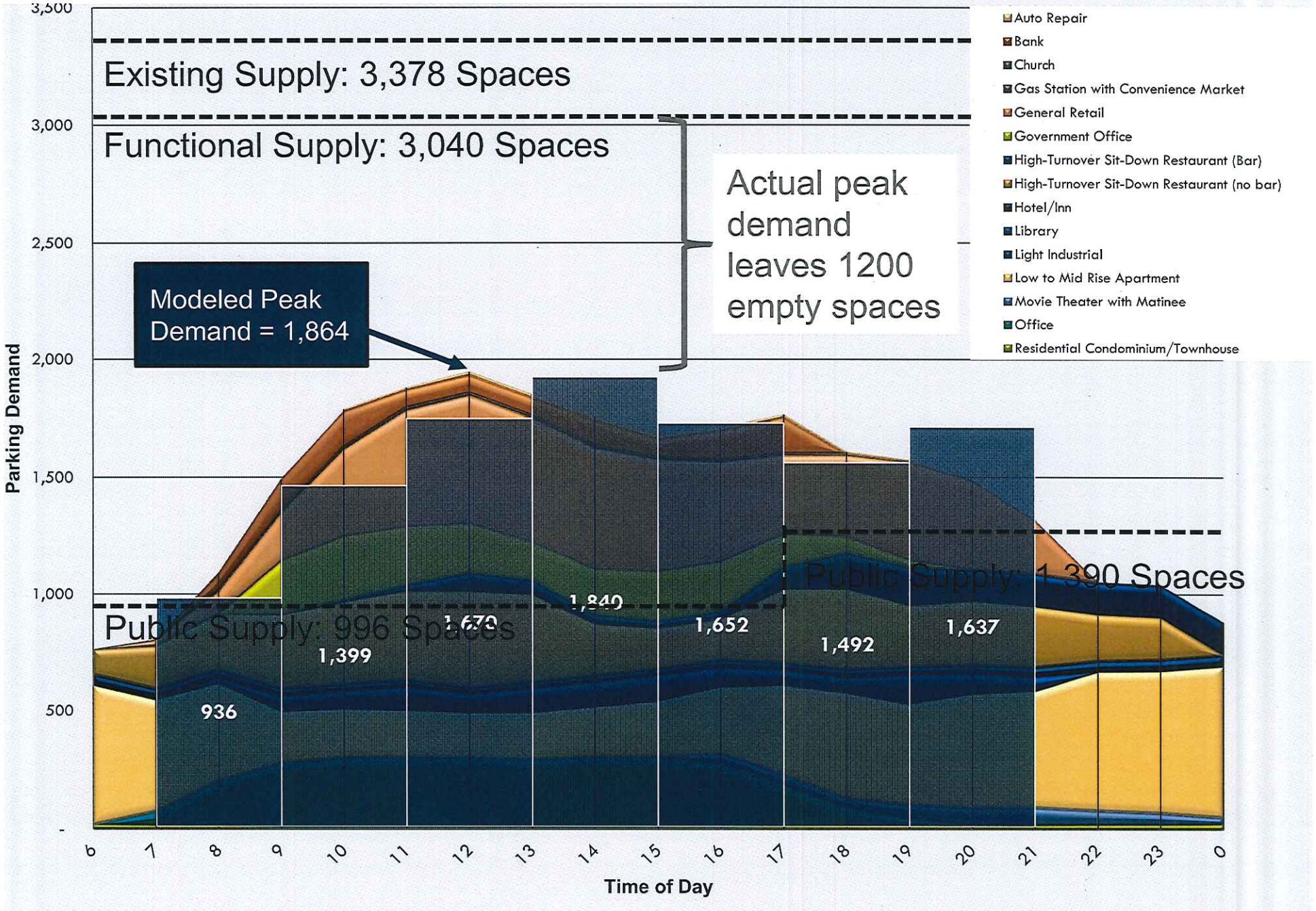
Parking Demand According to Industry Standards



Shared Demand

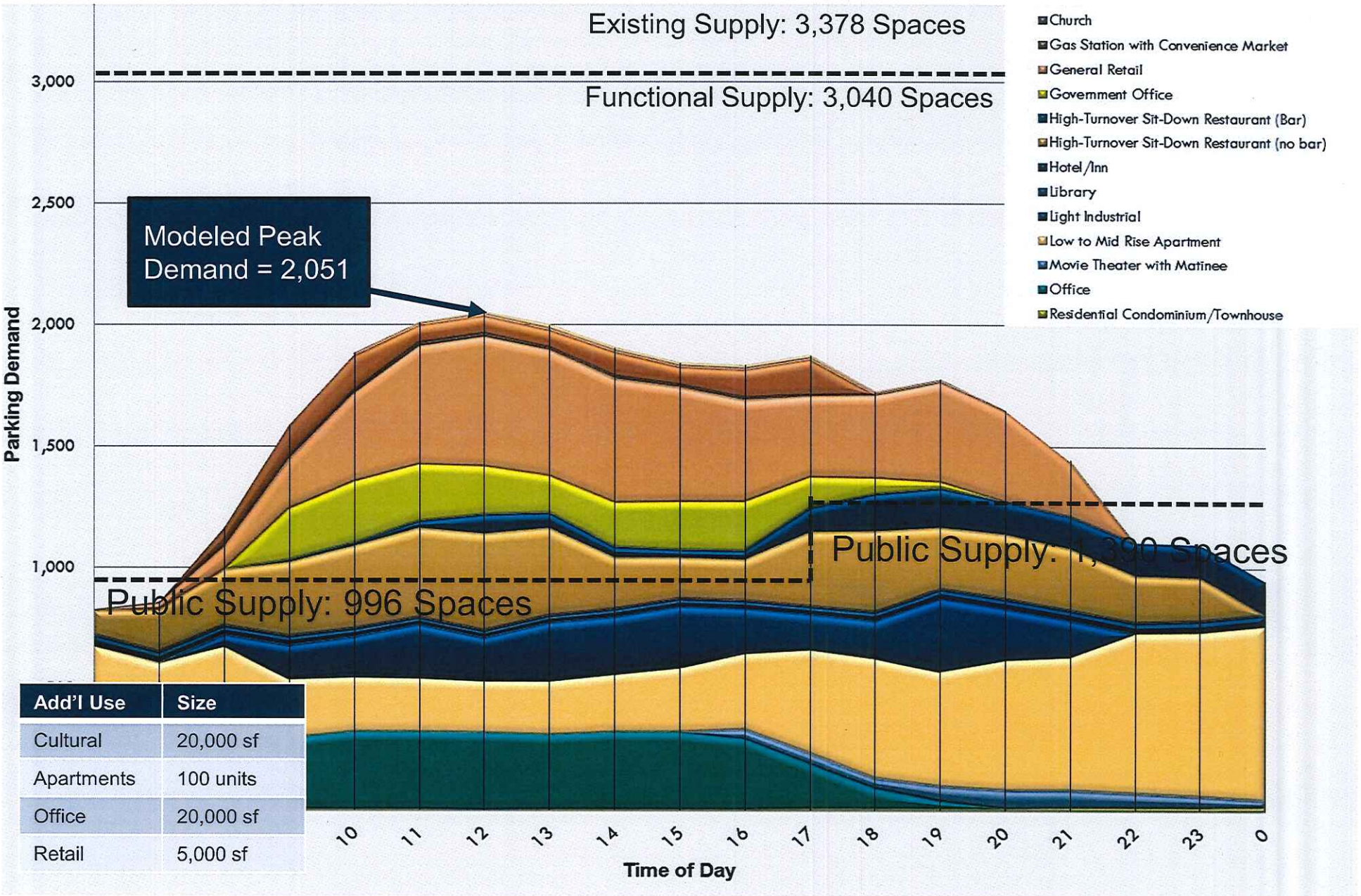


Shared Demand v. Observed



Scenario:

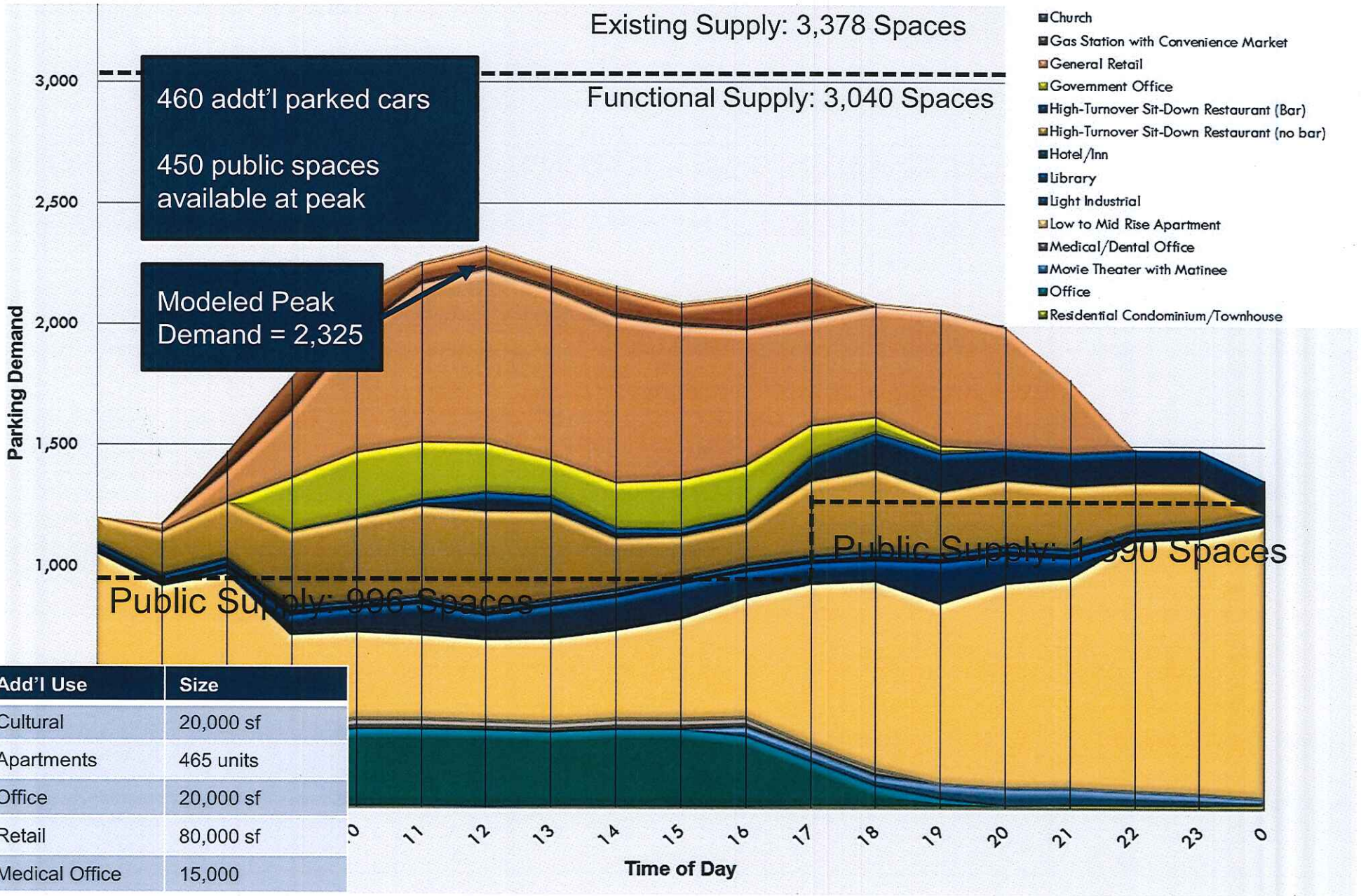
Add'l Development increases demand by 200 parked cars at peak



Add'l Use	Size
Cultural	20,000 sf
Apartments	100 units
Office	20,000 sf
Retail	5,000 sf

Scenario:

Max Development increases demand by 460 parked cars at peak



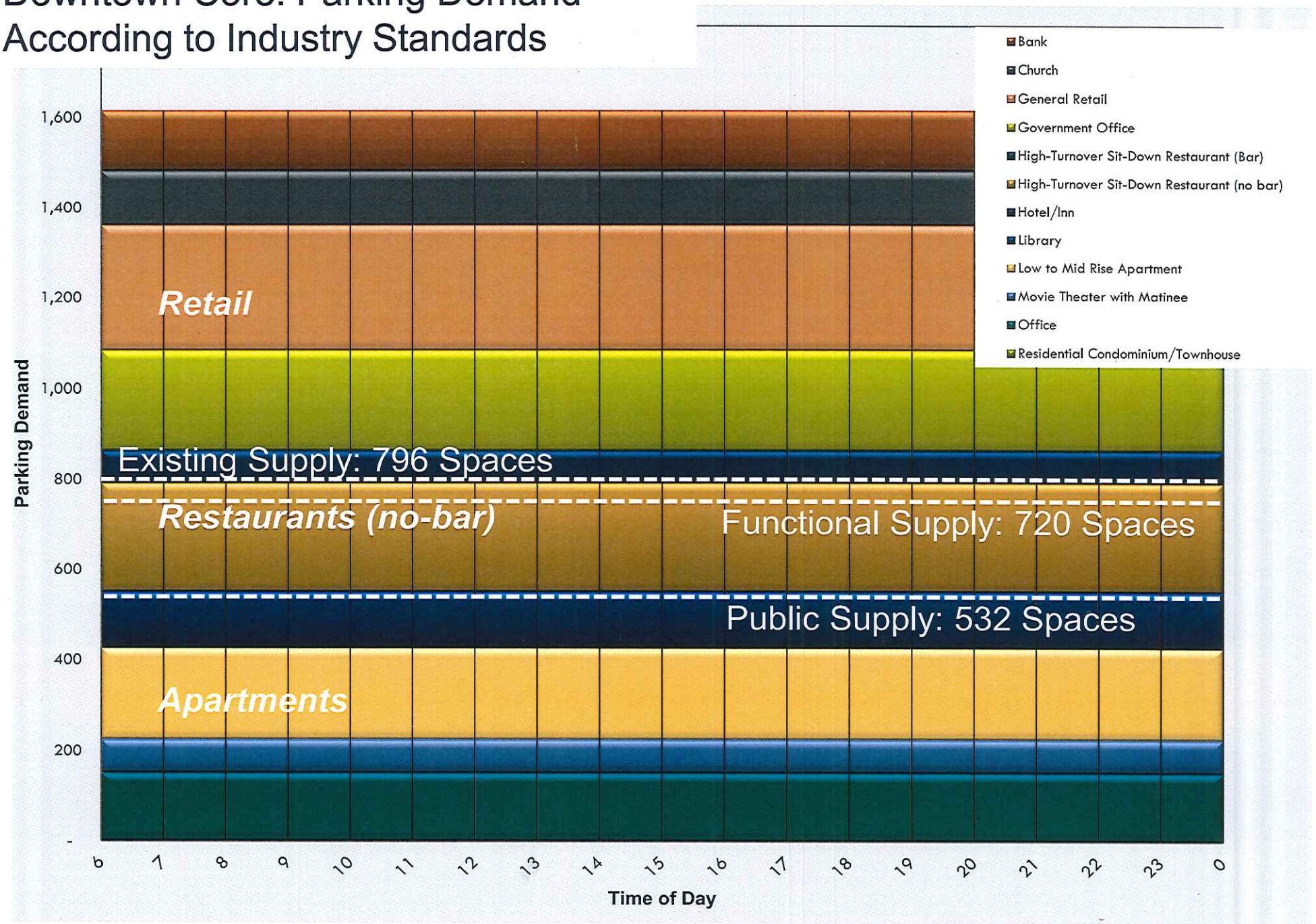
Add'l Use	Size
Cultural	20,000 sf
Apartments	465 units
Office	20,000 sf
Retail	80,000 sf
Medical Office	15,000

Downtown Core

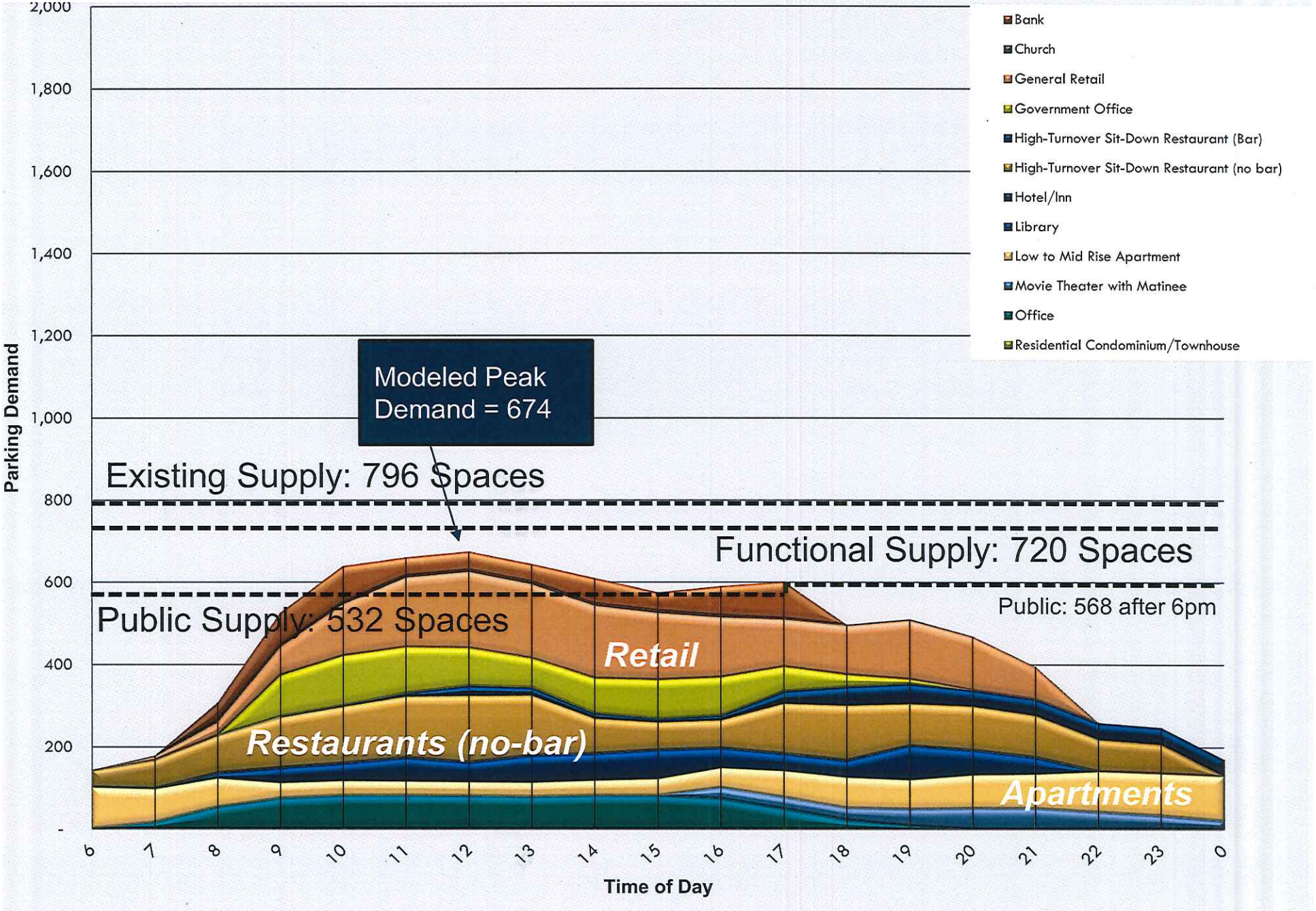
Downtown Core Land Uses

Land Use	Size	Units
General Retail	109,000	Square Feet
Bank	33,000	Square Feet
Sit-Down Restaurant (no bar)	44,000	Square Feet
Sit-Down Restaurant (Bar)	5,000	Square Feet
Movie Theater	280	Seats
Church	32,000	Square Feet
Library	48,000	Square Feet
Office	76,000	Square Feet
Government Office	53,000	Square Feet
Apartments	160	Units
Condos	1	Units

Downtown Core: Parking Demand According to Industry Standards

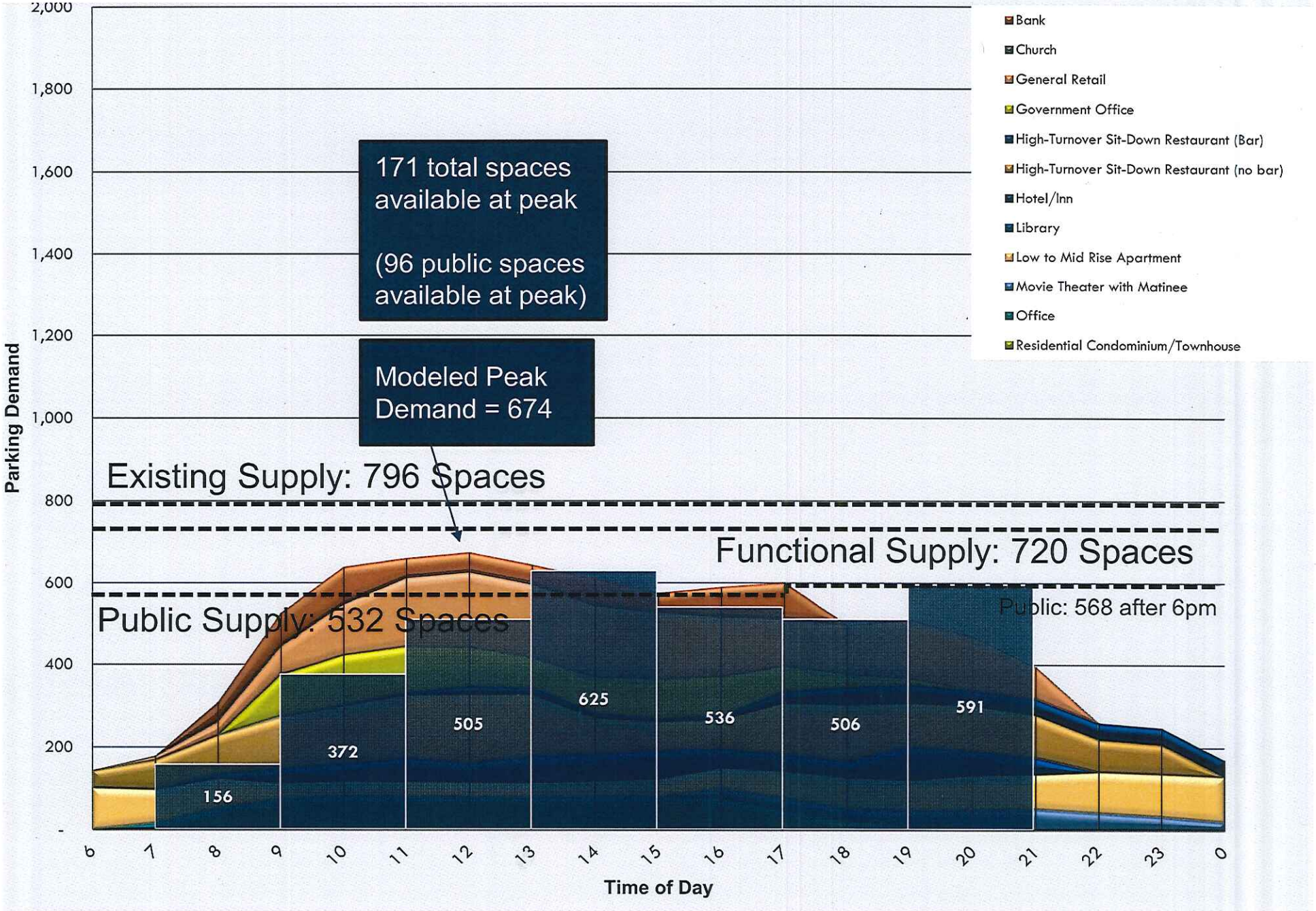


Downtown Core: Shared Demand



***includes TDM and internal capture adjustments**

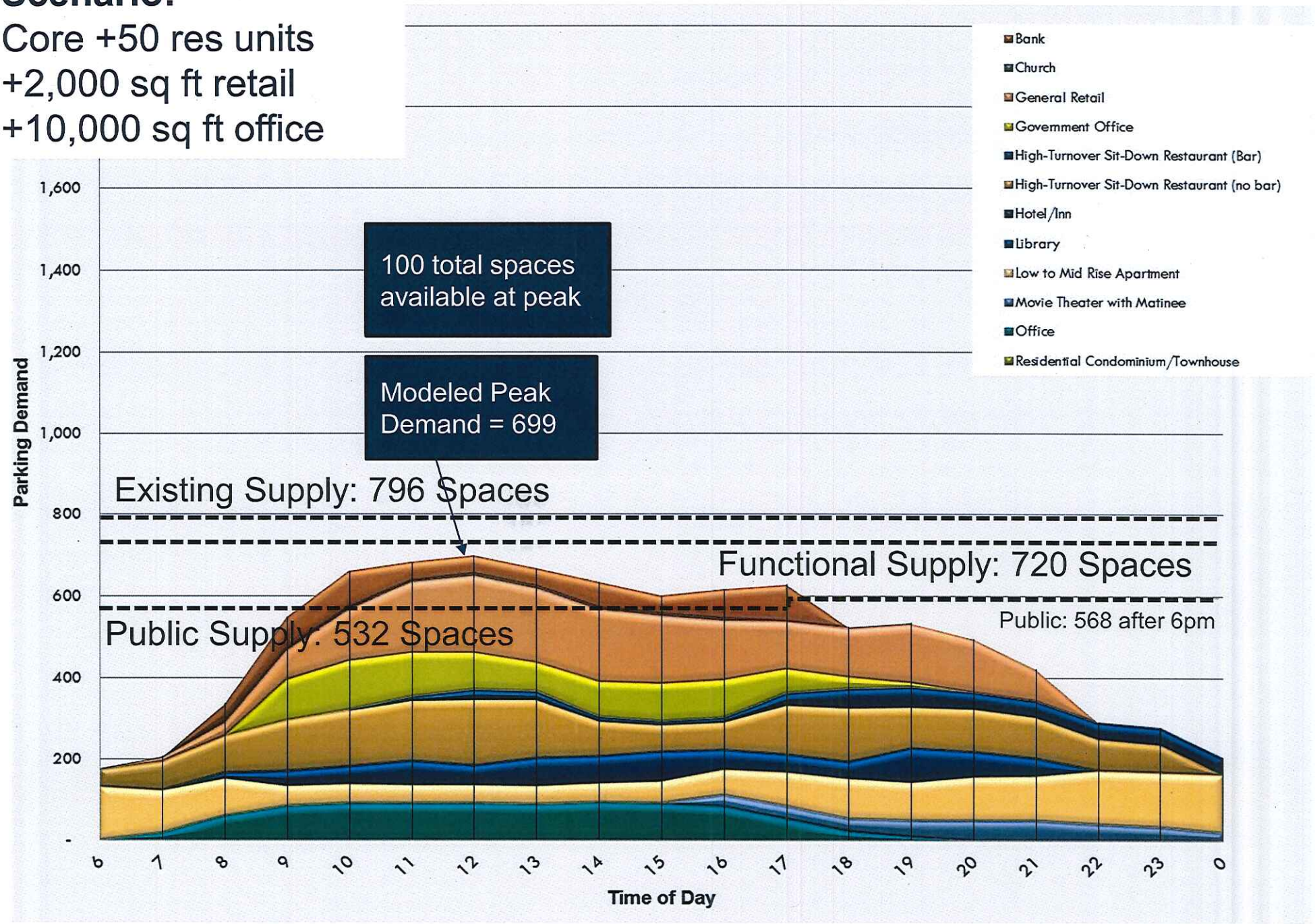
Downtown Core



***includes TDM and internal capture adjustments**

Scenario:

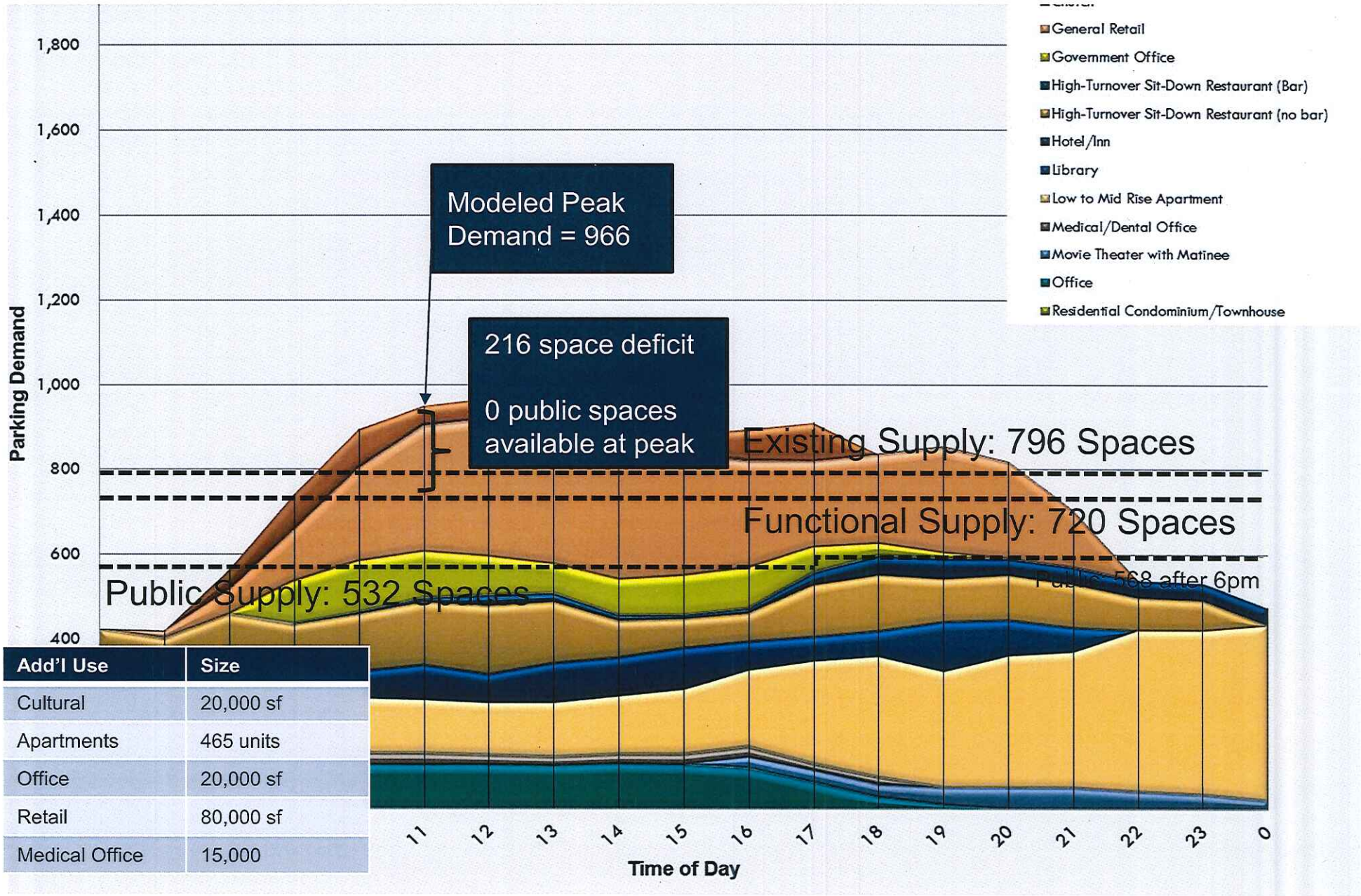
Core +50 res units
+2,000 sq ft retail
+10,000 sq ft office



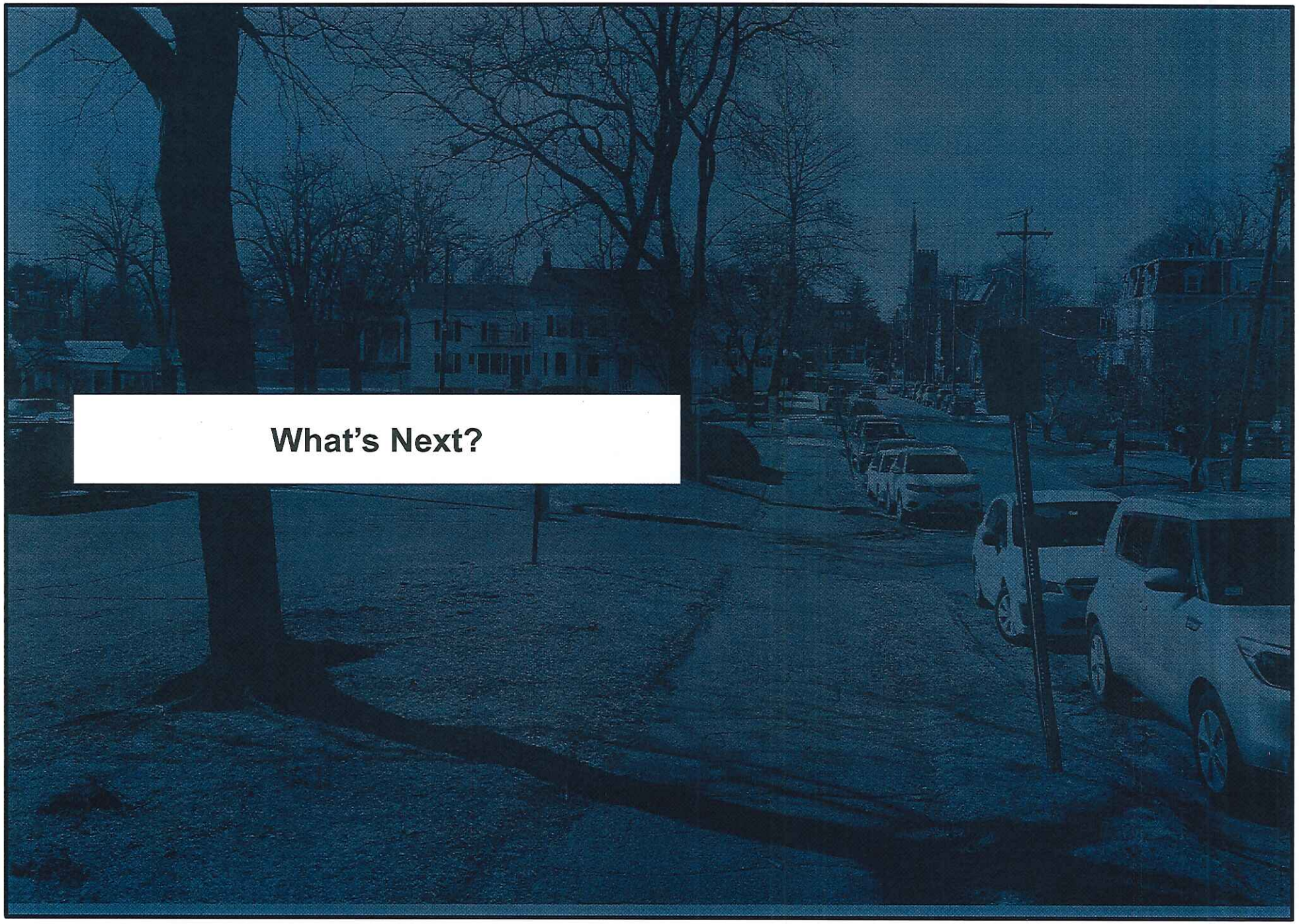
*includes TDM and internal capture adjustments

Scenario:

Max Development increases demand by 360 parked cars at peak



Add'l Use	Size
Cultural	20,000 sf
Apartments	465 units
Office	20,000 sf
Retail	80,000 sf
Medical Office	15,000


What's Next?

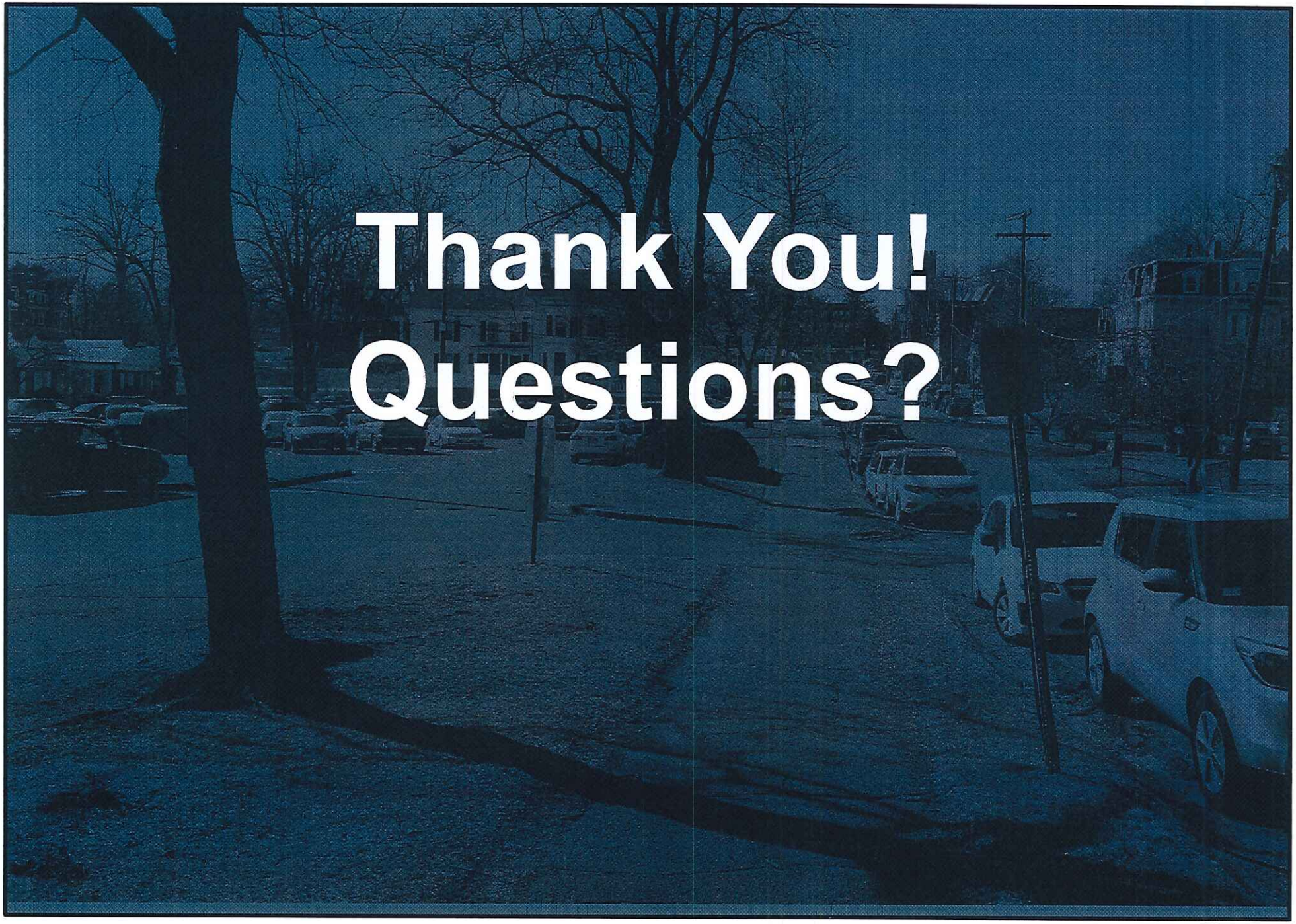
Parking Best Practices
Parking Working Group will consider these and others!

DEMAND BASED PRICING
Haverhill, MA

REMOTE PARKING INCENTIVE
Rockport, MA

SHARED PARKING
Lynn, MA

PARKING BENEFIT DISTRICT
Old Town Pasadena, CA


Thank You!
Questions?